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ABSTRACT

Presented are papers and programs generated as part of a Madison, Wisconsin project to develop a public school educational program for severely handicapped students. Three introductory papers deal with topics such as teacher training, litigation over questions of overinclusion and overexclusion, and what the practitioner needs from the researcher to develop public school programs for low-functioning individuals. Four language and reading skill programs are reported on the following topics: teaching pronouns, developing chart story reading skills, and improving reading comprehension. In the area of math, a developmental math skill sequence and a method for teaching students to solve addition problems are provided. Three papers on development of independent community living skills include an instructional model for developing home living skills, a family-life curriculum, and a method for teaching use of the telephone. Also included are a paper on training parents in child management and one on increasing the speech intensity of a retarded-emotionally disturbed student. (LS)

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A Collection of Papers and Programs Related to Public School Services for Severely Handicapped Students

Volume IV

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August, 1974

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Of course, as is always with handicapped children, the untiring efforts of parents to seek sound educational services is perhaps the most cogent force directing our activities. We thank them for their efforts.

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Overview

I. Presented in the following pages is the fourth in a series of volumes produced by the Madison Public Schools, which chronicles the development and implementation of quality educational programs for severely handicapped students.

We believe that these volumes reflect a continual evolution of instructual programs and the behavioral repertoires of students. These evolutions are interdependent. That is, increased sophistication in instructional programming has expanded the behavioral repertoire of students, while their expanded repertoires have necessitated the continual refinement of the instructional programming. It is hoped these evolutions will culminate in instructional programs which will enable students with mimimum entering abilities to achieve competencies in vital skill areas.

Recent litigation and legislation has clearly established that public school systems are responsible for the education of severely handicapped individuals within their jurisdiction. In many areas of this country the law requires that educational service be made available to all severely handicapped students between the ages of 3 and 21. Thus, severely handicapped students could potentially require public school programs which span 18 years. It is our philosophy that these persons should remain within their community and function as independently and productively as possible. Since the public schools have such a long term involvement with these individuals, the onus is upon them for attainment of this goal.

To achieve the goal of independence within the community it will be necessary to develop a scope and sequence encompassing various skill areas and spanning at least 18 years. The effectiveness of the programs comprising such a scope and sequence must be empirically verified to insure their efficacy.

It is our fundamental contention that viable instructional programs and service delivery systems must evolve from the students' performances in the classroom. It is only by focusing upon the classroom that the needs of the students can be in fact be met. Thus, the essence of quality educational programming is not buildings, books, and buses but is the classroom teacher. The papers and programs presented herein are a sampling of those implemented during the past instructional year by teachers in the Madison Public School System as we continue to implement this philosophy.

L.B.
W.W.
T.C.

DEVELOPING PROGRAMS FOR SEVERELY HANDICAPPED STUDENTS: TEACHER TRAINING AND CLASSROOM INSTRUCTION

Lou Brown and Robert York

University of Wisconsin and Madison Public Schools

Programming for the Severely Handicapped

This paper is intended to relate to some of the problems confronting those persons who are attempting, through the preparation of personnel, to generate quality services for severely handicapped students. In the recent past there have been several events of vital importance to the nature of services available to severely handicapped students. These events may be referred to as judicial-legislative actions. For a more historical and technical treatment of these judicial-legislative actions, the reader is referred to Gilhool (1973), Lippman and Goldberg (1973), and Schwartz(1973). Our admittedly unsophisticated interpretation of these events goes something like this. Children need to be included in, not excluded from, public school programs because they are "too something or other." That is, too custodial, too retarded, too disturbed, too autistic, too nonambulatory, too sick, etc. The parents and friends of severely handicapped children realized this, obtained counsel, and asked a group of judges for reasons why some children could go to school and other children could not. The judges found the reasons offered by others inadequate (e.g., no money, no room, no teachers, can't benefit) and ruled that all children should have equal access to public services. That is, if one child is entitled to a free public education, then all children are entitled to such a service.

Once one group of judges decided that all children had a right to the same public services, it became apparent that other judges in similar cases would probably reach the same conclusion. Thus, many state legislatures, involved in or anticipating similar litigation, enacted laws providing for free public education for all children within their borders (e.g., Washington, Wisconsin, and Michigan). Our purpose here is not to delineate the important and at times devastating implications of such comprehensive legislative and judicial actions. Rather we are assuming that in the very near future all children in the nation, regardless of level of functioning, will have access to a free public education. Thus, in our judgment, the issue now becomes how can we provide the best possible developmental services to the lowest functioning children in our society.

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Obviously, if a large number of severely handicapped children will be provided for in public school settings, a large number of special educators will be needed to develop and implement instructional programs for these newly acknowledged students. For the past several years, the writers and their colleagues have been attempting to prepare teachers who have the technological repertoires necessary to provide reasonable instructional services to these students both in public school and in residential settings. In the sections that follow we will attempt to delineate several of the basic components of an evolving teacher training model that we have found useful.

Who are Severely Handicapped Students?

The generic term "severely handicapped" as it is used here refers to children who have been given such labels as "low functioning," "trainable retarded," "severely emotionally disturbed," "severely retarded," "psychotic," "autistic," "custodial," "developmentally young," "schizophrenic," "subtrainable," "dependent," "multiply handicapped," "vegetables," and the like. Many of these children, until recently, have been excluded from public school programs because of various social, sensory-motor, behavioral, and intellectual deficits. Perhaps, more specifically, "severely handicapped"

> ...includes students who are not toilet trained; aggress toward others; do not attend to even the most pronounced social stimuli; self-mutilate; ruminate; self-stimulate; do not walk, speak, hear, or see; manifest durable and intense temper tantrums; are not under even the most rudimentary forms of verbal control; do not imitate; manifest minimally controlled seizures; and/or have extremely brittle medical existences. (Sontag, Burke, and York, 1973)

It should be noted that the term severely handicapped, as it is used here, did not amanate from a scholarly treatment of complex and dynamic categorical parameters germane to the categorization of children, but as a result of other more banal experiences. Namely, if students do not speak, follow directions, imitate, play with peers, control their own behavior, etc., they are severely handicapped in their ability to function in society and need to be taught such skills to do so. Given the developmental level of current assessment instruments and inferential measurement, we find little instructional validity in such terms as autistic, severely retarded, or low functioning. Therefore, we have chosen to refer to such individuals as "severely handicapped." It should be realized that the term is for the most part relevant to instructional programming and simply provides a generic name for the population of individuals discussed here. In the public school classrooms in which we are involved, almost every diagnostic label imaginable can be found by searching students' cumulative records. In addition, these individuals have spent time in nearly every type of service delivery system available (e.g., institutions for the mentally retarded, mentally ill, and emotionally disturbed; local ARC programs; private schools for exceptional children).

Thus, we have found it expedient to classify students into two social and academic functioning levels: mild and severe. The discrimination problems attendant to delineating the presumed differences between "emotionally disturbed," "mentally retarded," or "learning disabled" students can now be focused upon the differences between "mild" and "severe." However, such problems are in the hands of school psychologists, social workers, and administrators - with teacher attention being focused upon grouping and instructing children along relevant educational dimensions.

The Problem of Selection and Recruitment

When attempting to develop a college or university based training program for teachers of severely handicapped students, there are several inherent impediments that must be confronted.

First, extremely few college students have had exposure to severely handicapped children prior to entering college. Unfortunately, this lack of exposure in many cases results in people not even knowing that such children exist. Second, there are very few college students who start their careers with a strong inclination toward becoming teachers of severely handicapped students. Third, there seems to be a pecking order within special education. That is, it is apparently more glamorous for college students to manifest interest in becoming teachers of emotionally disturbed students or children with special learning disabilities that it is for them to declare interest in becoming teachers of severely handicapped students. Fourth, even though a person does manifest an interest in working with severely handicapped students, it does not necessarily mean that he or she will be an effective teacher. That is, there are people who have a mongoloid uncle or who have heard that there are going to be jobs open in the future for teachers of severely handicapped children and base their career decisions accordingly. We have found very little predictive validity in such factors.

Obviously, we have encountered such barriers and over a period of years have evolved compensatory actions that might be of interest to others. First, we offer a relatively large lecture course entitled "Introduction to Mental Retardation." Usually about 75-100 students enroll in this course each semester. The course is structured in such a way that students have an option of working with severely handicapped persons or taking standard university type tests. Over the past 8 semesters, 99.9 percent of the students who have taken the course have chosen to work with severely handicapped persons. Some of the settings in which these students work are in schools operated by the Madison Area Association for Retarded Citizens (programs for preschool and post school age persons), Central Wisconsin Colony (a residential facility for severely and profoundly retarded persons ranging in age from birth to ages 50-60), the Madison Public Schools, and a local nursing home for retarded adults.

Two of the few criteria of these practicum placements are (1) that the students work with professionals at the various facilities, and (2) that they make at least 2 trips per week for at least 1 1/2 hours per trip. After these practicum placements are arranged, those responsible for teaching the course visit the various facilities and talk to the professionals about the performance and capabilities of the university students under their supervision. The basic question asked of the professionals in the various facilities is "Who do you have that in your judgment will be a good teacher of severely handicapped students?" Responses to such a question usually result in a list of about 40-45 students. The professor in charge of the course then invites those delineated individually or in small groups to his office for coffee, etc., to discuss the possibilities of pursuing a career as a teacher of severely handicapped students. Usually, about 15 students per semester come to realize that what they have always wanted was a career teaching severely handicapped students. Obviously, the interaction between the recruiting professor and the student is crucial. However, the exact content of the conversations is perhaps inappropriate for presentation here. The point is that this is one vehicle that might be used to select and recruit potential teachers. Certainly there are other approaches, and we are sure that as preparation programs designed to train teachers of severely handicapped students develop over the country other vehicles will evolve.

The Need for Pre-License Practicum Involvement

Most children, even mildly handicapped children (i.e., children with learning disabilities, educably mentally retarded, and mildly emotionally disturbed children), come to school with reasonably well developed behavioral repertoires. That is, most students come to school toilet trained, with the ability to speak in varying degrees of fluency, with the ability to follow complex verbal directions, with the ability to play with peers with minimal supervision, with relatively complex receptive language skills, and with some ability to work alone in a constructive manner. Thus, teachers of normal and mildly handicapped children have many valuable social and emotional foundations upon which they can base their instructional systems. In addition, as teachers have usually been playing with and otherwise relating to children throughout their lives, there are many skills that teachers have acquired that are directly relevant to the job requirements needed for teaching mildly handicapped or normal children.

Obviously, all children are alike in some ways and, obviously, all children are uniquely individual in some ways. Unfortunately, severely handicapped children in many ways are dramatically different from their age peers. Thus, teachers of severely handicapped children require different teacher-child interaction skills. For example, such general approaches like "He'll grow out of it." "She'll learn to do it another way." "Just leave him alone." "You have to give her time." etc., are simply not applicable. Severely handicapped children may never "grow out of it," and they may never "try another way." Thus, we have found it necessary to provide teachers in training with intense and durable experiences with severely handicapped children. Several of the specifics related to these experiences are presented in another section of this paper. Perhaps it is appropriate here to present in outline form the structure of a typical pre-license practicum sequence.

First, a student will spend at least 3 hours per week working under professional supervision, usually in a non-public school setting, for 16 weeks or a total of 48 contact hours. Subsequently, students will spend 4 hours per day, 5 days per week for 16 weeks or a total of 320 contact hours in a public school classroom for severely handicapped students as part of a pre-practice teaching "methods course." Finally, students will spend 4 hours per day, 5 days per week for 16 weeks as a "practice teacher" in a public school classroom for severely handicapped students. Thus, across 3 semesters a student will spend approximately 680 contact hours with severely handicapped students under the supervision of various professionals.

Such a durable and intense practicum sequence is certainly not unique to special education nor is it a guarantee that a student will acquire the skills necessary to perform well as a teacher. However, in our judgment, this kind of sequence and involvement is at least necessary, however insufficient.

A Working Definition of Teaching

In an attempt to deemphasize the tendency to focus on aspects of severely handicapped students that classroom instructional personnel can do little if anything about (e.g., genes, brains, prenatal experiences, poor protoplasm), we have evolved a tentative definition of teaching.

Severely handicapped children are considered severely handicapped because they cannot perform skills that other children can perform. The dependent variables in an instructional setting are changes in the behavioral repertoires of the students. Thus, teaching refers to or may be defined as the creation or arrangement of an environment that produces specified changes in the behavioral repertoires of the students. This definition, of course, is an extreme oversimplification of a complex and dynamic construct and may have little if any utility for someone teaching poetry to gifted adolescents. Nevertheless, we have found substantial practical value in such a definition for at least the following reasons:

1. This definition requires that a teacher delineate or specify precisely the responses the students will perform that they are not now performing in the presence of the teacher. In effect, the teacher becomes an instructional determinist.
2. This definition requires that a teacher delineate or specify precisely the activities or behaviors in which he or she will engage that are expected to enhance the behavioral repertoires of the students. In effect, the teacher becomes an instructional environmentalist in that attention is focused almost exclusively on factors in the instructional environment (outside the body of the student) that the teacher can in some degree manipulate.
3. This definition requires that a teacher verify the existence of changes in the behavioral repertoires of the students. In effect, the teacher becomes an instructional empiricist in that changes in the students must be operationally defined and sensed.[2]

Thus, in our view, it seems reasonable to require a teacher of severely handicapped students (1) to specify what responses, skills, concepts, etc., he or she intends for the student to acquire, (2) to specify how he or she intends to impart such responses, skills, concepts, etc., and (3) to measure whether or not the students have the responses, skills, concepts, etc., in their behavioral repertoires.

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[2] For a further discussion of instructional determinism, environmentalism, and empiricism, the reader is referred to Brown, 1973.

On the other hand, the reader should be forewarned that when teachers of severely handicapped students attempt to adhere to the criteria of this particular definition of teaching they are assuming an unusual instructional responsibility. That is, they cannot claim or continue to claim the title of teacher until they have demonstrated that they have induced students to acquire skills or continue to induce students to acquire skills that they have not manifested previously. In other words "if I cannot engage in activities that result in changes in the repertoires of my students, I cannot claim to be a teacher."

Instructional Competencies

If a teacher adheres to the criteria of the definition of teaching presented above (i.e., teaching is changing students in demonstrable ways), then an instructional repertoire of behavioral competencies becomes crucial. Potential teachers can accure grade point averages of 4.0, they can talk in university seminars for hours about changing society, changing schools, relating to children, grasping the fundamentally transcendental nature of emotive child-teacher interactions, etc., but they cannot claim to be teachers until they have changed students in demonstrable ways.

While the quest for competency based models of instruction has been present in education for centuries, several factors have contributed to unusual recent concern. First, there is less of a shortage of licensed teachers now than ever before. Thus, many persons are less concerned with quantity and filling orders. Second, recent conceptual and empirical developments in the business community and in certain Federal government programs (e.g., the space program) related to systems analysis approaches to problem solving have permeated the thinking of many school administrators in the form of "management by objective contracts" (Vergason, 1973). This management by objectives approach is now becoming discernable in relation to the performance of teachers in classrooms. Third, the general mood of the country in the 1970s both politically and economically has shifted to the right of the general mood of the 1960s. This mood swing has brought to the fore ideas that many educators find disconcerting to say the least. Such concepts as cost-effectiveness, accountability, behavioral objectives, and long range manpower needs have put new pressures upon school administrators, teachers, and teacher training institutions. Competency based teacher training models are but one of the manifestations of these new pressures.

One view of an instructional competency is as follows: an instructional competency is a set of behaviors a teacher engages in that result in empirically verifiable changes in the behavioral repertoires of the students in his or her charge. For example, assume that a teacher determines that a student should demonstrate the skill of correctly adding any 2 numerals that total 10 or less (predictable change). The teacher then must arrange an instructional environment (engage in behaviors) that results in the student's performing such skills. If the student does not perform the skills, then it must be assumed that the teacher does not have the competencies necessary to teach them. Stated another way, "the person cannot claim to have taught because it has not been demonstrated that anything was changed."

If this view of instructional competencies is imposed upon teacher training institutions, several interesting phenomena might occur. It is the rare teacher training institution indeed that claims to produce incompetent teachers. If the training institution claims to produce competent teachers, then it is responsible for empirically verifying the specific competencies a particular teacher has acquired. If training institutions opt for competencies as they have been described here, then most paper-pencil tests of competencies are irrelevant. Thus, potential teachers must be able to demonstrate that they can change public school students in prescribed ways before they receive a license to teach. Just as parents have the right to expect that physicians have demonstrated skills necessary to cure certain ailments before the physician is exposed to their children, parents have the right to expect that teachers have demonstrated skills necessary to teach before the teacher is exposed to their children.

The position proposed here is that severely handicapped students are often dramatically different, if only in degree, from mildly handicapped students and thus need teachers with different competencies. For example, most severely handicapped students manifest severe speech and language deficits, severe behavioral management problems, severe imitation deficits, severe academic skill acquisition deficits. Thus, a competency based training model must require that potential teachers have demonstrated that they have taught severely handicapped students to speak, to communicate, to imitate, to perform basic academic skills, to behave appropriately, etc., prior to obtaining a teaching license.

Perhaps a quote from Sontag, Burke, and York (1973) is appropriate here:

> In our view, there is a direct relationship between the level of the student's disability and the competencies of the teachers, i.e., the more pronounced the level of disability, the more specific and precise are the competencies required of the teachers. Most nonhandicapped and mildly handicapped students acquire information and skills from many diverse and nebulous sources: parents, teachers, siblings, peers, TV, toys, etc. These children can develop in spite of a poor teacher or an unconcerned parent. However, severely handicapped students have not been able to acquire the general basic skills and information in any way, from anyone, or anything. Therefore, unless drastic environmental manipulations are engineered, severely handicapped students will not be able to acquire the needed general basic skills and information. Procedures that are typically used by parents, TV producers, siblings, and most classroom teachers to impart skills and information to nonhandicapped and mildly handicapped students are of little utility with severely handicapped students.
>
> The issue then becomes "What competencies are needed by the teachers of severely handicapped students?" In our view, the teachers' competencies are directly related to the instructional problems and acquisition deficits presented by the students. Thus, if the students are not toilet trained, but are physically capable of becoming so, the teacher must have within her instructional repertoire an applicable technology which will result in such students becoming toilet trained. If students are nonimitative, nonverbal, and/or do not attend or respond to social stimuli, then the teacher must be able to teach the students to speak, imitate, and/or relate to social stimuli.

Concomitantly, the teachers must be able to do away with self-mutilating behavior, stereotypies, temper tantrums, and various escape and avoidance behaviors. In addition, the teachers must be able to teach the students to play with and acquire information from materials, self-feed, self-dress, ambulate, write, read, compute, etc. Finally, it is the teacher who will be the major source of practical information for the parents of the students in her charge. Thus, the teacher must be able to function as an effective parent-trainer.

At this point in time, it is a rare teacher who has been able to acquire all the skills needed to teach severely handicapped students merely from the experiences obtained in his or her college level special education training program. Assuming that the previous statement is accurate, then it seems logical that there are very few teachers in the field who have the competencies to teach severely handicapped students and that there are very few, if any, teacher training programs producing teachers with these needed competencies. Thus, most of the new classes arranged for these students will be staffed by untrained teachers.

During the past five years, the writers and their colleagues have at various times drafted lists of behavioral competencies without which a teacher of severely handicapped students presumably could not succeed. A detailed presentation of these lists is obviously inappropriate for inclusion here. However, it might be fruitful to delineate several of the categories that were articulated.

1. Techniques of managing severe behavior problems
2. Procedures for the development of teacher made instructional materials
3. The engineering of physical properties of classrooms
4. Basic principles of acquisition and performance
5. Basic principles and techniques of instructional measurement
6. Basic principles of imitation training, generalization, discrimination, and maintenance
7. Basic principles of task analysis
8. Development and implementation of instructional programs
9. Procedures used to develop curriculum sequences

It should be noted and emphasized that this is only a partial list of categories and that within each category substantial listings of behavioral competencies are mandatory. Thus, it was our objective to produce teachers with demonstrated behavioral competencies in each of the categories listed above. In all honesty we have found this task to be impossible. That is, we have been incompetent teacher trainers in that we have not demonstrated that our students could perform all the required competencies necessary for the provision of quality instructional services to severely handicapped children. Unfortunately, we have had to resort to paper-pencil and verbal ("Tell us what you would do if. . .") indications of potential classroom instructional performance (i.e., inferential measurement).

Components of an Instructional Program

We realize that in presenting this model of teaching severely handicapped students we are oversimplifying complex multi-person interactions. Nevertheless, we have found it advantageous to attempt to conceptualize many classroom activities into what may be referred to as instructional programs. As instructional program in our view may be conceptualized as consisting of at least 4 not necessarily mutually exclusive components: content, method, materials, and measurement.

Content

Content refers to the what of instruction. That is, if the teacher asks the question "What do I want a student to be able to do that he could not do in the past?" he or she is asking a content question. Content refers to specific responses students might make when presented with specified stimuli. Most available "curriculum guides" are composed primarily of instructional content or information related to what a teacher might decide to attempt to teach. However, rarely do curriculum guides contain the precision in content delineation mandatory for instructing severely handicapped students. That is, such guides rarely specify the specific responses to specific stimuli that a student is supposed to emit and what criteria or acceptable level of performance the child must achieve to be considered to have learned a task. Such precision in curriculum delineation is not new to education (Mager, 1962, p. 12), it simply has not been utilized in the vast majority of curriculum guides.

In an attempt to realize precision in content delineation, we have found a task analysis approach quite useful. By a task analysis approach we mean that at some point in time a teacher takes the responsibility of determining what responses the students should make. This determination may be labeled the terminal objective. Once a teacher has specified a terminal objective, it is necessary that he or she divide the objective into steps or components that lead from responses in the student's present behavioral repertoire to the terminal objective. The teacher then arranges these steps in a series so that the student's progress through the series culminates in the performance of the terminal objective. These components may be extremely small bits of behavior taught separately and then chained together into the terminal objective, or they may become part of a more complex response as soon as they are acquired. If, for example, a child cannot move easily from step 5 to step 6, then step 6 may be too demanding and perhaps there should be a step 5 1/2. Increasingly finer breakdowns (slicing) of the curriculum or the elimination of unnecessary steps are constant aspects of the task analysis process as one goes from the teacher constructed task analysis to the task analysis required by the student to achieve the terminal objective. Bateman (1971) describes this process as a progression from a logical task analysis (that constructed initially by the teacher) to an empirical task analysis (that actually necessary for the student to perform the terminal objective). Thus, a task analysis approach is always a dynamic process in which it is most likely that any given task analysis will be modified for individual students.

The following is an example of a task analysis currently being developed for use in a public school classroom for young severely handicapped students (Swetlik, 1974). This task analysis emanated from two teacher observations. First, it was observed that in many situations requiring expressive or receptive verbal language the students were not using or comprehending personal pronouns appropriately. Second, the students did not appear to comprehend personal pronouns when they were included in reading material. Thus, the appropriate use and comprehension of personal pronouns were judged crucial longitudinal language and reading skills. The teacher then attempted to develop an instructional program that would result in the development of selected uses of personal pronouns. What follows is the task analysis component of that program.

Task Analysis*

Phase I: Teaching students to or verifying that students could imitate selected one, two and three word verbal responses.

- Part 1 - Teaching students to or verifying that students could imitate one word verbal responses (e.g., "I").
- Part 2 - Teaching students to or verifying that students could imitate two word verbal responses (e.g., "I am).
- Part 3 - Teaching students to or verifying that students could imitate three word verbal responses (e.g., "I am standing.").

Phase II: Teaching students to perform actions in response to verbal cues, to visually discriminate actions, and to label actions.

- Part 1 - Teaching students to perform actions in response to verbal cues (e.g., "Show me standing.").
- Part 2 - Teaching students to visually discriminate actions (e.g., "Touch someone standing.").
- Part 3 - Teaching students to label actions (e.g., "What is Joe doing?").

Phase III: Teaching students to visually discriminate themselves, the teacher, and classmates in response to name cues.

- Part 1 - Teaching students to visually discriminate themselves in response to a name cue.
- Part 2 - Teaching students to visually discriminate the teacher in response to a name cue.
- Part 3 - Teaching students to visually discriminate classmates in response to name cues.
- Part 4 - Teaching students to visually discriminate themselves,

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* This task analysis is a slightly revised version of that which appeared in Focus on Exceptional Children.

the teacher, and classmates in response to name cues.

Phase IV: Teaching students to visually discriminate males and females in response to 3rd person singular subject pronoun cues.

Part 1 - Teaching students to visually discriminate males in response to the 3rd person singular subject pronoun cue he (e.g., "Touch a he.").

Part 2 - Teaching students to visually discriminate females in response to the 3rd person singular subject pronoun cue she (e.g., "Touch a she.").

Part 3 - Teaching Ss to visually discriminate males and females in response to the 3rd person singular subject pronoun cues he and she (e.g., "Touch a he; touch a she.").

Phase V: Teaching students to make proper name responses to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns.

Part 1 - Teaching students to label the teacher in response to "who" questions containing the 1st person singular subject pronoun I (e.g., "Who am I?").

Part 2 - Teaching students to label themselves in response to "who" questions containing the 2nd person singular subject pronoun you (e.g., "Who are you?").

Part 3 - Teaching students to label the teacher and themselves in response to "who" questions containing the 1st and 2nd person singular subject pronouns I and you (e.g., "Who am I? Who are you?").

Part 4 - Teaching students to label male classmates in response to "who" questions containing the 3rd person singular subject pronoun he (e.g., "Who is he?").

Part 5 - Teaching students to label female classmates in response to "who" questions containing the 3rd person singular subject pronoun she (e.g., "Who is she?").

Part 6 - Teaching students to label male and female classmates in response to "who" questions containing the 3rd person singular subject pronouns he and she (e.g., "Who is he? Who is she?").

Part 7 - Teaching students to label themselves, the teacher and male and female classmates in response to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns (e.g., "Who am I? Who are you? Who is she/he?").

Phase VI: Teaching students to respond to "Who-doing" questions with the 1st person singular subject pronoun and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing.").

Phase VII: Teaching students to respond to "Who-doing" questions with the 2nd person singular pronoun and present progressive verbs (e.g., Q: "Who is standing?" A: "You are standing.").

Phase VIII: Teaching students to respond to "Who-doing" questions with the 1st and 2nd person singular subject pronouns and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing." Q: "Who is standing?" A: "You are standing.").

Phase IX: Teaching students to respond to "Who-doing" questions with 3rd person singular subject pronouns and present progressive verbs.

Part 1 - Teaching students to respond to "Who-doing" questions with 3rd person singular subject pronoun he (e.g., Q: "Who is standing?" A: "He is standing.").

Part 2 - Teaching students to respond to "Who-doing" questions with the 3rd person singular subject pronoun she (e.g., Q: "Who is standing?" A: "She is standing.").

Part 3 - Teaching students to respond to "Who-doing" questions with the 3rd person singular subject pronouns he and she (e.g., Q: "Who is standing?" A: "He/She is standing.").

Phase X: Teaching students to respond to "Who-doing" questions with 1st, 2nd and 3rd person singular subject pronouns and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing." Q: "Who is standing?" A: "You are standing." Q: "Who is standing?" A: "He/She is standing.").

Another aspect of task analysis crucial to the teacher of severely handicapped students that should be made salient is its relationship to assessment. A teacher confronting a severely handicapped student for the first time can learn little about the new student from the information obtained from traditional assessment instruments (IQ tests, achievement tests, etc.). A technique of much greater instructional relevance is that of individual assessment on components of specific task analyses. This approach requires that the teacher proceed through each of the steps of the analysis he or she has developed for each of the tasks being taught in the classroom. Instruction would then begin on those steps performed incorrectly by the student and proceed sequentially through more difficult steps. Students might be grouped according to the steps to be taught and proceed in accordance with the attainment of criterion level performance on those steps rather than on the mean performance of the group or as a function of the passage of time. Presently, all of the necessary task analyses are not available for an ideal assessment system (all necessary skills analyzed from zero competence in an area to complete competence in that area). However, rapid progress is being made in some areas (e.g., math, see Resnick, Wang & Kaplan, 1973); and it is the rare teacher who cannot do better than traditional inferential measurement devices.

Finally, before leaving this cursory treatment of instructional content, a note concerning the direction we feel content delineation should take might be in order. Whenever possible, we have chosen to emphasize the areas traditionally known as academic - i.e., speech and language, reading, math, and writing. Thus, we find ourselves in agreement with the 1967 position of Cawley and Pappanikou:

> However, the success of failure of a human being in Western civilization has, is, and apparently will continue to be based upon one's ability to express oneself orally, to read, to write, to deal with number concepts, and to handle money.
>
> With this in mind, then, it is indeed quite perturbing to the special educator who from time to time has to witness program and discount academics on the pretense that birthday parties and craftwork are more important to the final integration,habilitation, and/or rehabilitation of the retarded in society. This is usually done in the name of personal and social adequacy. Such a change in curricular emphasis is looked upon by these authors more as an inability of that particular teacher to adapt methods of instruction appropriate to the aforementioned characteristics of her pupils, than as an inherent inability in the particular retardate to learn academics.

The reader interested in securing further information regarding instructional content that might be relevant to instruction programs might find the following selected references of interest: Becker, Englemann, and Thomas (1971); Bricker and Bricker (1972); Bricker and Bricker (1973); Bricker, Dennison, Watson, and Vincent-Smith (1973); Engelmann (1969); Molloy (1972); Sailor, Guess, and Baer (1973); Sheperd, Wyrick, and Bilyeu (1970); and Thiel (1972).

Method

Method refers to the *how* of instruction. If a teacher asks the question "How do I get a student to *do* what he could not do in the past?" he or she is asking a method question. Specifically, method is concerned with how a teacher arranges the instructional environment, including his or her own behavior, so that enhancement of the behavioral repertoires of the students can be empirically verified.

Teaching students to make the responses that were delineated and sequenced in a task analysis is in our judgment the most difficult function the teacher performs. That is, a teacher can develop or purchase a precise and logical task analysis, utilize beautiful and relevant materials, and generate creative measurement systems; but if the teacher cannot teach the student to perform new responses, all is for naught. The techniques, tactics, procedures, principles, etc., that we employ related to the *how* of instructing severely handicapped students have been taken from the contributions of such persons as Itard, Sequin, Montessori, Descoeudres, Fernald, Strauss and Lehtinen, and Skinner.

Recently, however, we have found it useful to generate instructional methods from the conceptual framework of what is referred to as *applied behavior analysis* (Baer, Wolf & Risley, 1968; Bandura, 1969). More specifically, we make conscientious attempts to systematically utilize such principles, tactics, procedures, etc., as response priming, imitation training, escape training, avoidance training, stimulus fading, stimulus discrimination and generalization, contingent consequation, overcorrection, errorless learning, and response chaining. Unfortunately, space does not permit a more detailed presentation of how the principles delineated above are converted for use in classroom instructional programs. The reader interested in such a presentation is referred to Brown, Bellamy, and Sontag (1971); Brown and Sontag (1972); and Brown, Scheuerman, Cartwright, and York (1973).

Materials

Once teachers determine the specific responses they intend to teach (i.e., what to teach), they then must determine the materials (persons, places, printed words, physical objects, etc.) to which those responses should be made. In other words, instructional materials should be generated subsequent to the delineation of instructional objectives. Unfortunately, there is an extreme dearth of sequenced instructional materials that have either been developed or empirically verified for classroom use with severely handicapped students. In general, it has been our experience that commercially available sequenced materials are not sufficiently concrete, precise, redundant, or relevant for use with most severely handicapped students. Thus, the teacher is forced to rely on his or her ingenuity to generate new or adapt existing materials.

It is expected that in the near future, because of the appearance of large numbers of severely handicapped students in public schools, a concerted effort on the part of commercial publishers and others will be made to develop much needed instructional materials. Hopefully, attempts will be made to empirically verify the validity of the materials prior to unrestricted dissemination. There is little doubt that the Wippie-dip Language, Reading, Math Science, Motor, and Self-Help Contraption for Delayed, Low Functioning, Severely Handicapped But Needy Children will appear and be purchased by many "because there is nothing else available." However, such a dilemma is still uncomfortable.

Measurement

In any empirical definition of teaching, instructional measurement is crucial. With normal and mildly handicapped students, inferences about populations of skills made from samples and inferences about generalization of skills across persons and places and materials are probably necessary and tenable. Unfortunately, inferential measurement, in our judgment, is an extremely questionable measurement orientation when applied to most severely handicapped students. The general rule that we try to follow may be stated as follows: If you determine that a particular response, skill, concept, etc., is important to the development of the student, then it is incumbent upon the teacher to directly measure the existence of the response, skill, concept, etc. of concern. A related aspect of direct measurement may be stated as follows:

> Direct measurement is particularly crucial in attempts to teach cumulative tasks. If the correct performance of the responses in component c of a task are dependent upon the correct performance of the responses in components a and b, then the teacher must guarantee that a and b

> responses are in the behavioral repertoire of the student before she even considers progression to component c. Since most developmental skills are in many ways cumulative (mathematics, reading, language, speech, practical arts), teachers of trainable-level retarded students must be prepared to spend relatively long periods of time and considerable effort developing basic behavioral repertoires. (Brown, 1973)

Thus, it is necessary that teachers be skilled in the use of measurement designs that allow for the frequent and direct measurement of relevant behavioral dimensions. Frequent measurement is crucial if only to delineate instructional failure as soon as possible. That is, assume that a teacher designs and implements an instructional program in September, continues to implement that program until December, and then measures how much of the information, etc., in the program the students acquired. If the students acquired 100% of the information, fine. If, however, the students acquired none of the information, the teacher has wasted a substantial amount of instructional time and energy. More frequent measurement would have allowed the teacher to delineate and adapt to instructional failure much sooner. On the other hand, direct and continuous measurement of all responses performed in the classroom throughout the entire school year is impractical, unnecessary, and irrelevant. Obviously, a balance has to evolve in each classroom with each student and each teacher.

In an attempt to provide teachers with a reasonable amount of flexibility regarding how much, how often, and what to measure directly, we have found it necessary to provide them with information, examples, and, in some situations, practice using some of the following subjects as their own controls paradigms and related measurement skills: reversal designs, learning set designs, trials to criterion and errors to criterion designs, multiple baseline and modifications of multiple baseline designs, test-teach designs, and cumulative frequency designs.

Hopefully, if teachers have a sufficient number of measurement designs in their technological repertoires, they will apply these designs to the evaluation of the instructional programs in their classrooms - thus enabling themselves to base daily or weekly adaptations in the content and methods of instruction upon student performance.

In summary, an instructional program requires a teacher (1) to determine what to teach students by precisely delineating behavioral objectives, (2) to determine how to teach students by clearly specifying his or her instructional activities, (3) to select or generate materials that require responses delineated in the behavioral objectives, and (4) to measure directly the responses of the students in an attempt to evaluate instructional effectiveness.

The Potential for Backlash

Thousands of severely handicapped children who were formerly accommodated at home, in private schools, in private and public residential institutions will now attend public schools. In the face of a restricting economic environment there are several potentially devastating reactions. It is extremely doubtful that many communities have at their disposal the *additional* economic resources necessary to secure the teachers, space, transportation, equipment, administrative personnel, etc., required to serve these *new* students. Most communities will have to reallocate resources currently assigned to other services.

If it can be demonstrated that a child who was once tied to a bed in an institution because he or she was self-mutilating can now read, write, compute, socialize, and in other ways behave more adaptively, few people will complain about giving up a new chemistry lab, new football uniforms, or small portions of their salary increases (Lovaas, 1974). If, on the other hand, a child who was tied to a bed in an institution is now tied to a bed in a public school classroom, it is doubtful that many persons will graciously accept the aforementioned economic adjustments. Obviously, the example of the child tied to a bed was used to dramatize a point. However, children sitting in classrooms finger painting for 10 months is less dramatic but will probably make the same point to the economically strapped taxpayer.

We believe the outcome of the placement of severely handicapped students in the school systems will be a function of the quality of the programs the school systems provide. Obviously, quality programs will be dependent upon the skills of the teachers hired to develop and maintain them. This, of course, makes the work of the trainers of these teachers extremely important.

Severely handicapped persons have not fared well in our society in the past. However, it seems that we now have an opportunity to create humane, tolerant, developmentally sound, and existentially relevant social and emotional environments that can replace the oppressive, rejecting, undignifying, and intolerant systems so long in operation. Hopefully, special education will supplement the activities of parents with varied contributions. Hopefully, among these contributions will be the production of aggressive and creative administrators capable of designing and engineering novel and flexible service delivery systems, and highly competent, dedicated, and efficient classroom teachers capable of providing quality instructional services over long periods of time. Finally, as we have so little in our technological repertoires that has any empirical validity, special education will have to generate a substantial body of new information specifically applicable to the instruction of severely handicapped persons. Stated another way, "we have to get special, nothing else works."[3]

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[3] The reader will no doubt note the paucity of references in the body of this paper. The writers have compiled an outline for a course entitled "Methods of Instructing Severely Handicapped Students." This outline includes substantial bibliographies in such areas as self-help skills, reading, math, behavioral management, language development, basic principles of acquisition and performance, instructional measurement and imitation training. This outline is available upon request (Dr. Lou Brown, 427 Education Building, University of Wisconsin, Madison, Wis. 53706). In addition, a bibliography related to curriculum content and materials for retarded students is available upon request.

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QUESTIONS OF OVERINCLUSION AND OVEREXCLUSION AND THEIR EFFECTS ON SPECIAL EDUCATIONAL SERVICE DELIVERY[1]

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A variety of legal and professional contingencies are currently effecting service delivery patterns in special education. An overview of these contingencies, their effects on special educational services, and some suggestions for future directions are offered in the following pages.

Special education has been criticized both for overincluding and overexcluding individuals in various service categories. Overexclusion refers to excluding individuals from special educational services who could derive benefits and overinclusion refers to including individuals in special educational services when such inclusion is or will likely be detrimental. The responsibility of responding to many issues related to overexclusion and overinclusion which have historically been matters for empirical study and philosophical debate has been assumed by litigation. Legal actions have set precedents that will greatly influence special educational service delivery systems at national, state, and local levels.

Special educational services are delivered through regular classes, consulting teachers, resource programs, self-contained integrated classrooms, self-contained classes in a regular school, segregated facilities in a public school system, homebound services, hospital services and residential institutions. Issues germane to overexclusion and overinclusion are relevant to all of these service categories.

Empirical Considerations

A great deal of professional concern was generated in the mid to late 1960s regarding the self-contained special class placement of mildly handicapped students. Dunn (1968) wrote a paper entitled, "Special education for the mildly retarded - is much of it justifiable" which quickly became the focal point of literature pertinent to determining the efficacy of special class placement. Hammons

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(1972) aptly notes that Dunn's article was only symptomatic of a growing disenchantment with the then current service models used by special educators. Many educators before Dunn had expressed concern about the efficacy of special class placement (e.g., Blatt, 1960; Blatt and Garfunkel, 1964; Kirk, 1958; Goldstein, Moss and Jordon, 1965; and Johnson, 1962) and currently the questions of the efficacy of special class placement are not resolved.

Disenchantment with special education derives in part from such efficacy research, and from a large and growing number of studies which support the arguments that: special education testing and placement procedures are biased; (e.g., Rubin, 1973) labeling creates stigmas which may lead to irrepairable damage (e.g., Jones, 1972); and that a surprising percentage of students in special education are misplaced and once placed rarely get out (e.g., Garrison and Hammill, 1971; Mercer, 1970; Franks, 1971).

Most of the studies mentioned thus far were concerned with the overinclusion of mildly handicapped students in special classes. However, overexclusion of the more severely handicapped has begun to be questioned. A number of studies are compiling evidence that severely handicapped individuals can benefit from intense educational intervention (e.g., Bricker and Bricker, 1970; Larsen and Bricker, 1968; Risely and Wolf, 1967). Educators have used such studies in testifying before courts and as a basis for lobbying before legislative committees as to the educability of all individuals. Implications drawn from empirical studies have had considerable influence on litigation and legislation related to overexclusion and overinclusion.

Selected Litigation Related to Overinclusion

For mildly handicapped individuals inclusion in special education placements based on traditional testing patterns and service categories is under scrutiny from the courts and legislative bodies. As early as 1954 in Brown vs. Board of Education legal precedent was established that tracking systems separate students on the basis of socioeconomic and racial considerations thereby violating their right to an equal education. Hobson vs. Hansen (1967) clearly extended the Brown decision to special educational services when Judge Skelly Wright held that there was a disportionate number of black children in special classes. Wright attributed this inequitable distribution to culturally biased tests.

More specific court rulings regarding standardized tests have challenged their constitutionality and utility in making special education placement decisions. In Larry P. v. Riles (1972) the plaintiffs claimed that the school district was employing an I.Q. test that was culturally biased against blacks thus classifying a disproportionate number of blacks as retarded. The plaintiffs, using statistical evidence to support their claim, reported that retesting with test items reworded in terms consistent with the students' background produced significantly higher test scores. In fact, the scores were higher than the special education class cutoff point.

In Larry P. the court agreed with the plaintiff's contention and issued a preliminary injunction against further use of the I.Q. tests. It found the school district's defense (that it did not rely solely on the I.Q. test) was irrelevant because they placed "substantial" emphasis on the test results. The court also rejected the district's argument that the plaintiffs had no cause for complaint because parental consent is a necessary prerequisite to special class placement because the parents apparently did not have full information about the biased nature of the assessment tools utilized in determining placements. It also found legally untenable the district's claim that "since black people tend to be poor and poor pregnant women tend to suffer from inadequate nutrition, it is possible that the brain development of many black children has been retarded by their mother's poor diet during pregnancy." In fact, the court held that the ability to learn is randomly distributed among the population.

In a similar case, Diana v. State Board of Education, (1970) nine Mexican American public school students claimed they had been improperly placed in classes for the mentally retarded on the basis of "inaccurate" tests. Each plaintiff came from a predominantly Spanish speaking family. The plaintiffs argued that the tests were "improperly" standardized on only white native Americans and relied exclusively on verbal aptitude in English which ignored learning abilities employing other linguistic symbols (Spanish). This case was settled in an agreement which required that children must be tested in both their primary language and English; that culturally biased sections or test items be eliminated from such tests; that minority children already in special classes be retested according to the above standards; that each district submit a summation of retesting and a plan to help each special child return to the regular classrooms; that state psychologists develop nonbiased tests; and that an explanation for disportionate number of Mexican Americans in special education vs. regular education be submitted.

Schwartz (1973) believes that a question more fundamental than the invalidation of a test when a racial claim is attached is how far the courts will go to invalidate a testing device that has been shown to misclassify any student. He notes that, in Armstead v. Stuckville Municipal Separate School District, use of the Graduate Record Examination was ruled unconstitutional as a screening device for hiring teachers whether or not its use was racially discriminatory. Other studies support Schwartz's contention (e.g., Koening, 1974).

An interesting case which has implications for due process, labeling and stigma in special education placement is Wisconsin v. Constantineau (1971). In a particular Wisconsin community whenever officials found an individual to be publicly intoxicated too often they would post that person's name in the town square and outside of each of the taverns. Mrs. Constantineau's name was posted. She turned to the courts and argued that her name could not be posted unless she was first given notice and an opportunity to be heard. The Supreme Court agreed and said, "The only issue present here is whether the label or characterization given a person by 'posting' though a mark of illness to some is to others a stigma or badge of disgrace that procedural due process requires notice and the opportunity to be heard." A need for a hearing prior to the placement or classification of a "handicapped" individual may be inferred from the Constantineau case and in light of such decisions accompanied by empirical evidence (Mercer, 1970) the need for notice and hearing at government burden and cost becomes clear.

Selected Litigation Related to Overexclusion

A landmark decision affecting overinclusion and overexclusion in public school classes was Pennsylvania Association for Retarded Children vs. the Commonwealth of Pennsylvania (1971) (P.A.R.C. v. Penn.). After hearing many expert witnesses in P.A.R.C. v. Penn., the court ruled that retarded persons could benefit from educational scenes. The court further ordered:

1. That placement in regular class is preferable to placement in a special class, and special class placement is preferable to placement in any other program whether homebound, itinerant, or institutional;
2. That the state may not deny homebound instruction because of no physical disability or the long term nature of the problem;
3. That each child be reevaluated at least every two years and once a year at parental request;
4. That there be free access to free public education and training appropriate to the child's capacity;
5. That the state shall secure services outside the school if needed services are unavailable within the school.

In a case which relates to institutional level special education, Wyatte v. Stickney (1971), Judge Johnson of the Northern Alabama District ruled that citizens at state schools have certain rights. Specifically the right to human physical and psychological environments;

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to regularly review treatment or educational programs which are designed individually; to receive their services in the least restrictive setting (community or public school); to the use of telephone; to send and receive letters; and to privacy.

Lack of funds has been used as a justification for excluding individuals from special education services. Still, the courts have consistently ruled that if the Constitution requires it, if the statues require it, it shall be done. An example is *Mills vs. Board of Education* (1971). In this case the Board of Education claimed a lack of sufficient funds for the education of the handicapped. The court held that the exclusion of the handicapped "cannot be excused by the claim of insufficient funds . . . Available funds must be expended equitably in such a manner that no child is entirely excluded from a publicly supported education consistent with his needs and ability to benefit therefrom." Schwartz (1973) suggests that this is analogous to cases which hold that failure to provide suitable and adequate services to the mentally ill cannot be justified by a lack of staff or facilities. In short, the ruling says that the state cannot provide services for some and can for others because it would cost too much to provide services for all.

Selected Legislation Related to Overexclusion and Overinclusion

Abeson (1972) found that 70% of the states have passed education for the handicapped laws. For example, Chapter 89 of the Wisconsin State Laws of 1973 features some of the following mandates:

1. All children between the ages of 7 and 16 (or 7 and 18 if the child resides in a school district which contains a vocational school) are required to attend an appropriate educational program. This is intended to make equal application of the compulsory school attendance laws to both the handicapped and non-handicapped. Further, the law required that educational programs are to be made available to all children with exceptional educational needs between the ages of 3 and 21 years.

2. All children upon entering school shall be screened for potential learning difficulties, examined by a multidisciplinary team and then educated according to an educational prescription based upon their individual needs.

3. In accordance with due process procedures, the parent or guardian has the right to appeal any school board decision based upon the recommendations of a multidisciplinary team. Also, it provides the right to an independent examination if a child's parents believe the diagnosis or evaluation of the child is in error. The school

district shall reimburse the parents for reasonable expenses of this examination if the parents are financially unable.

4. The child's school district is made responsible for assigning a child with exceptional educational needs to an appropriate special education program as near home as feasible and with non-handicapped students wherever possible.

5. Use of private non-sectarian service is to be checked as to its constitutional propiety by the Attorney General's Office.

6. That the Department of Public Instruction is to be held responsible for supervision of special education programs in state institutions.

In short, recent legal actions such as "Chapter 89", Larry P. v. Riles, and P.A.R.C. v. Penn. have altered special education service delivery patterns by mandating due process and opening public school programs to all individuals. In face of such mandates and related empirical evidence, concerned professionals in the field of special education are suggesting alternative patterns for serving handicapped individuals.

Selected Alternatives

Lilly (1971) offers a zero reject service model for individuals whose handicaps are relatively mild but does not recommend the model for the severely handicapped. By zero reject Lilly means that once an individual is enrolled in a regular education program within a school it is administratively impossible to remove him for any reason. He states that the advantage of the zero reject model is its placement of the responsibility for failure on the school programs rather than the student; its requirement that problems be solved by those directly involved; its removal from educators the possibility of ultimate failure with a child by denying the growth of isolating classrooms as an expedient solution to complex problems.

Adamson and Van Etten (1972) criticize the zero reject model for throwing out existing programs instead of building on what is already known. They question how the special educator can tell regular teachers what to do when special education has not proven itself first and ask when and how regular educators would be retrained to function within the model. Adamson and Van Etten go on to describe an alternative model already in operation in Olathe, Kansas, which provides special education services for rejects and potential rejects from regular education classrooms.

The model, called "Fail Save", involves an initial ten week period in which an educational specialist evaluates the student referred as a potential regular education reject, programs for the referred student, trains the student's regular classroom teacher, and oversees the implementation of a special program. At the end of a ten week period, the specialist, the student's teacher, the school administrator, and the student's parents decide if the program was successful. If it was not they can opt for another ten weeks of the same program or put the student in a resource/ regular class placement. Resource room placement cannot continue for more than 90 days without reevaluation to determine if the student should: a) remain in the resource/regular class placement for another 90 days; b) return for 10 week trial in the regular classroom; or c) be assigned a special class resource room placement for no more than 9 months without reevaluation. After two 9 month placements in a special education resource room, the student has to move back up to the resource/regular class placement for a 90 day trial.

Gallagher (1972) presents a model which is intended to counteract the most difficult and obnoxious elements of labeling. He bases his model on four assumptions:

1. Exiting students to special education is an easy way out for general education and must be made more difficult.

2. Bureaucracies such as educational systems will move institutionally only under threat or duress.

3. Special educational assistance is called for in many students who have mild handicaps.

4. A special education operation will continue to function separately from general education for severely handicapped students and for students who need a more intensive program than is possible through a resource person to the regular teacher or a resource room.

Gallagher's model calls for a contract between parents and schools upon placement of a student in special education. This contract would specify goals, set a time limit for their achievement and commit special educators to measurable objectives to be "upgraded" at six month intervals. There would be a two year maximum special education placement time limit renewable only after a quasijudicial hearing.

Reynolds and Balow (1972) introduce a model for delivery of special education services in which the classification of individuals is concerned with the allocation of children among positively defined instructional systems. Reynolds and Balow discuss instructional systems as integrated sets of procedures, curricula, and materials that may be used to achieve positively stated educational goals. Within this model there would be many reading, language, math, motor, and cognitive instructional systems to accommodate individual differences. Students would be allocated to different instructional systems on the basis of tests of academic and social performance. Teachers would be classified according to their specialty areas such as pre-school language specialists or mobility instructors, not as special education or regular education teachers. Special education would interface with regular education through developing systems based upon teacher competency and acting as a resource to the school.

Reynolds and Balow state the advantages of this model as: emphasizing individual student variables rather than categorical variables; providing for a wide range of program options; identifying teachers by competency; emphasizing mainstreaming; shifting the blame for problems from people to systems and stating program goals in positive terms.

Vergason (1973) supports the use of a voucher plan as a system for delivering special education services for the low incidence handicapped student in sparsely populated areas. Vergason's plan is worthy of mention because it deals with the problem of low incidence and the resultant high cost of service which often leads to overexclusion. However, some researchers (e.g., Blatt, 1972; and Guarino and Sage, 1972) suggest that voucher systems are in need of standards and many voucher systems as presently implemented are actually detrimental to the education of handicapped individuals. On the other hand the literature does not rule out the use of some form of voucher system as a potential service delivery model for special education.

Discussion

An examination of the proposed alternative service delivery systems for handicapped individuals selected, reveals that the authors were concerned with at least the following questions:

1. How can appropriate groupings be formed without the negative side effects involved with current classification and labeling systems?

2. How can an image of the "problem child" be replaced with a system failure concept?

3. How can the problems of overinclusion and overexclusion be attenuated or neutralized?

4. How can a system of accountability be constituted that would deal with efficacy in services for the handicapped?

Although the models reviewed have many positive suggestions, no one model adequately answers these questions and related issued raised by the current litigation and legislation. In addition, such models have yet to demonstrate their practicaility and efficacy. In whatever way special education answers the four questions listed above, it will have to deal with all service categories and document the efficacy of its answers. Further, mandates from litigation and questions from increasingly active consumer groups (such as those who sponsored the legal actions discussed in this paper) indicates that inferential data will be highly scrutinized and that normative procedures which label and classify may often be considered biased.

Recommendations

After reviewing selected issues related to special educational service delivery models the following recommendations seem appropriate:

1. Due to a need for greater objectivity in special educational service delivery systems, general objectives for special education should be operationally stated. That is, stated in such a way that they can be empirically verified.

2. In order to enhance precision and accountability, special educators should use data based programming whenever possible.

3. One thrust of research should be toward the development of more flexable, but accurate direct measurement systems for classroom use.

4. Entry and exit criteria should be set for each level of service. (National guidelines might be established but specifics would have to be negotiated at state and local levels. For example criterion could be based on "task analysis" (Brown, 1973; and Bateman, 1971), and could follow a modified Reynolds and Balow model which determines the entry and exit of students to different instructional systems or service levels on the basis of task analysis based tests of academic and social performance.)

5. Another thrust of research should be the development of alternative service delivery models which are compatable with the trends in litigation and legislation.

In summary, educators of all students should develop and be trained to operate within service delivery models which are compatable with the trends in litigation and legislation. Regardless of a particular model special educators must be prepared to document the efficacy of their activities to the general public as well as before courts of law.

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A Partial Delineation of What the Practitioner Needs From the Researcher in Developing Public School Programs for Selected Low-Functioning Individuals

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I. Problem

Due to pressure from parental groups, litigation and legislation (Schwartz, 1973; Gilhool, 1973; Lippman and Goldberg, 1973) there have been increased pressures and mandates in many areas of the country to provide educational programs for all persons within specified age ranges. Madison Public Schools (Madison, Wisconsin) wherein the programs to be discussed are being developed, has implemented what may be called a "zero reject" educational model. Within this model the educational system is obligated to provide educational programs for all handicapped persons between the ages of three and twenty-one years regardless of current functioning levels. Due to the implementation of the "zero reject" model individuals who previously remained at home or received services through ARC programs are now in public school programs for the first time. As a result we are currently developing longitudinal public school programs for the lowest functioning individuals in the Madison School District.

This population includes students who:

a. do not imitate
b. self-mutilate
c. smear
d. ruminate
e. self-stimulate
f. seizure (not medically controlled)
g. aggress towards others
h. do not follow simple verbal directions
i. are heavily medicated
j. have unstable medical conditions
k. are not toilet trained
l. do not attend to salient stimuli
m. have intense and enduring temper tantrums

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In short, these individuals typically have extremely limited behavior repertoires in such vital areas as language, imitation, self-help skills, community survival skills, motoric behavior and vocational skills.

II. A Search for Teaching Procedures, Program Content and Sequence

In the process of developing public school programs for the low functioning individuals described above we have been looking to such areas as regular education, special education, experimental psychology, experimental mental retardation, and applied behavioral analysis for viable information on instructional procedures, content and sequence. We have attempted to integrate information from these areas in order to articulate basic notions of how to teach, what to teach, and how to measure the efficacy of selected instructional procedures, program content, and sequence.

Slide Set I:

1. How to teach: A basic and general instructional procedure
    - a. reinforcement
    - b. modeling and imitation
    - c. priming
    - d. fading
2. What to teach
    - a. task analysis
        - 1) sequence
        - 2) materials
3. Measures of efficacy
    - a. direct measurement design
        - 1) ABAB Design
        - 2) Multiple Baseline Designs
        - 3) Test-Teach-Test Design
        - 4) Trials to Criterion Design
        - 5) Errors to Criterion Design

The reader is referred to Brown and Williams (1974) for **bibliographies** of readings which will articulate the basic instructional procedure, content and measurement procedures in detail.

III. Two Components of Developing Public School Programs for Selected Low-Functioning Individuals

The system we are utilizing to develop public school programs for selected low-functioning individuals consists of at least two nonmutually exclusive components: 1) empirically verifying that the students can be taught arbitrarily selected skills; and 2) developing more effective and efficient instructional procedures, program content and sequence.

1. Empirically verifying that the students can be taught arbitrarily selected skills.

   Utilizing the basic notions of how to teach, what to teach, and how to measure efficacy discussed above, we have been able to teach the population of individuals described a wide range of arbitrarily selected skills. The following slides depict a representative sample of these skills. It must be noted that most of the students shown here were initially nonimitative, nonverbal, did not follow verbal directions, were not toilet trained, etc., when they initially entered public school. These students have now been in a public school program from one to two years.

   Slide Set II:

   a. prepositions
   b. self-care
   c. reading
   d. writing
   e. sound imitation
   f. expressive language
   g. association by function
   h. colors
   i. auditory discrimination
   j. one-to-one correspondence
   k. one-many
   l. equality
   m. addition

2. The need for evolving more efficient instructional procedures, program content and sequence.

   After empirically verifying that these students could learn arbitrarily selected skills, the efficacy of current instructional procedures, program content, scope and sequence, etc. had to be addressed. In our judgment what we know and are doing now is inadequate. Thus, we are in need of more effective and efficient programs in all instructional areas. In an attempt to illustrate some of the problems we have encountered across instructional areas we would like to present an object recognition program.

Object Discrimination Program (WGTA) - One object recognition program we use involves teaching a student to demonstrate an object discrimination when given a verbal cue. For example, when the student is presented with a ball and a cup and given the cue, "Touch ball," the student should touch the ball. In teaching object recognition skills to a student we concurrently teach them to scan and imitate. In the instructional paradigm, the teacher can then have the student scan the stimulus array before emitting a response to the verbal cue and can teach correct responses through modeling.

Slide Set III:

a. modeling and imitation
b. scanning
c. object recognition

Instructional difficulties - Utilizing this basic procedure and sequence we have been able to teach most students varied discrimination skills (e.g., object recognition, colors, big/little, reading). However, it often appears that students learn these skills due to the persistence and sophistication of the teacher, rather than effective and efficient instructional procedures, program content and sequence. In other words some of the problems we have encountered with this procedure are:

a. for some students it takes hundreds of trials to teach them to demonstrate a simple cup-ball discrimination;

b. for many students responding is quite variable;

c. the skills usually do not generalize and maintain to the extent we desire;

d. many program variations are often tried before the students consistently demonstrate the discriminations.

A Clinical Reaction to Instructional Difficulties - As a result of such problems we will look almost anywhere for notions of how we can improve our programming. I will briefly describe some of the strategies we have implemented to enhance the efficacy of the object recognition program.

1. Sign Language: We drew on and adapted some of the notions of Bricker (1972) and Yoder (1975, personal communication) and implemented a sign language program to facilitate learning of object recognition. The sign language program involved teaching the student to make the American Sign Language sign for the objects to be discriminated. Within the instructional program the teacher would present two objects (e.g., chair and pants),

and the response cue to touch one of them (e.g., touch chair) while she made the sign for the object. The student then had to make the appropriate sign for the requested object (e.g., chair) and touch it. The preliminary data indicated that the addition of a motoric gesture such as a sign may facilitate the student learning to demonstrate object recognition when given a verbal cue.

Slide Set IV:

a. teaching signing
b. teacher giving response cue
c. student making sign
d. student making discrimination

2. Functional Object Use: The work of Miller and Yoder (1973) and Bricker, Dennison, Watson, Vincent-Smith (1973) suggested that teaching students the functional use of objects to be discriminated may facilitate discrimination learning. For some students a functional object use program was conducted concurrently with the object recognition program. The program consisted of teaching the students to functionally utilize (e.g., drink from cup, stir with spoon) the objects they were learning to differentially respond to when given a verbal cue in their object recognition program. The data from this program suggested to us that teaching the student the functional use of objects facilitated the student demonstrating an object discrimination when given a verbal cue.

Slide Set V:

a. functional use of napkin
b. functional use of spoon
c. functional use of cup

3. Errorless Discrimination Learning: Here we drew on and adapted some of the notions of Sidman and Stoddard (1967), Touchette (1968 & 1971) and Terrace (1963) in developing a version of what is referred to in learning research literature as an errorless discrimination learning paradigm.

To implement the program we built two light boxes. The intensity of the light in one box could be raised and lowered independently of the other. There were five calibrated light intensities which varied from bright to dark. A sock and a pencil were hung in front of the boxes (their position was randomly varied) and the student was first taught to touch the object on the lighted box when given the cue "Touch." Next, the student was given a cue to touch either the sock or the pencil with the light at full intensity behind the correct object. After the student emitted three consecutive correct responses, the light intensity behind the correct object. After the student emitted three consecutive correct responses, the light intensity behind the correct object was dimmed to the next lower intensity. If the student emitted two consecutive errors, the intensity behind the correct choice was increased to the next highest intensity. These procedures were continued until the child responded errorlessly without light cues. The objects were then transferred from the boxes to a table. Preliminary data from this program indicate rapid and almost errorless learning of the discriminations.

Slide Set VI:

a. errorless learning sequence

The result of these explorations is that we have gathered some information on potentially viable instructional procedures, program content and sequence for facilitating severely handicapped childrens' acquisition of object recognition to a verbal cue. Our attempts to develop more effective instructional procedures, program content and sequence in other instructional areas suggest similar results.

However, the clinical data we are accumulating on program development does not satisfy us. We would like help from the researcher in lending precision and control which is difficult to obtain in public school classrooms to the development of public school programs for these students.

IV. What We Need From the Researcher

The following is a cursory listing of some of the information we need to enhance the programs we are developing for these students.

1. We need information on the longitudinal effects of various program alternatives. For example, it may be the case that students will acquire discriminations more rapidly through an errorless learning paradigm but perhaps the behavior will not readily maintain nor generalize.

2. We need information on how to fit various programming alternatives or branches to specific children.

3. We need information on what to teach these students and in what sequence. For example, perhaps we are putting too much stress too early or out of sequence on object recognition programs.

4. The programs described here were implemented utilizing a low student to teacher ratio (i.e., 1:1 - 3:1). We need to either develop methods for programming in larger groups or to develop a technology (teaching machines) which can accommodate a low ratio.

5. We need techniques for solving severe management problems in public schools. Institutions shock, food deprivation, restraint and isolation have been used to establish behavior control. In public school settings there are restrictions on the use of such procedures.

6. If the skills we teach these children are to maintain and generalize, we will need to work closely with parents. We need information on how to facilitate effective parent school interactions.

7. A key skill to facilitating the independent functioning of these students is expressive language. Thus far we have not been very successful at teaching these students to use functional expressive language.

8. Many of these students are on drugs for medical reasons. We need ways of minimizing drug effects which are detrimental to student performance.

9. We need help in making programs for these students useable by untrained public school teachers. The programs articulated here were supervised by or implemented by public school teachers with intensive training in operant analysis procedures and behavior modification. To make these programs viable for untrained public school teachers we could:

    a. intensively train teachers in the use of operant analysis and behavior modification procedures;

    b. detect and program for these students at a very young age such that intensive intervention in public schools may be unnecessary;

    c. operationally define and articulate instructional procedures, program content, and sequence to the point where a relatively untrained teacher can read a program and effectively implement it.

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TEACHING SEVERELY HANDICAPPED STUDENTS TO EXPRESS SELECTED FIRST, SECOND, AND THIRD PERSON SINGULAR PRONOUN RESPONSES IN ANSWER TO "WHO-DOING" QUESTIONS

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Impaired language and communication skills constitute major impediments to the social, emotional, and vocational adjustment of retarded citizens (Schiefelbusch, Copeland & Smith, 1967). In fact, deficits in language probably define developmental retardation more than any other aspect of behavior (Bricker & Bricker, 1972). More specifically, the language of retarded children has been characterized as "not being developed beyond stereotyped patterns of speech" and "delayed in the development of such conceptual linguistic functions as generalization, association, discrimination, and the manipulation of verbal concepts" (Schlanger, 1967, p. 137). Keane (1972, p. 5) concludes, "The one undisputed fact that has been well documented is that there is a higher than normal incidence of communication (speech, language, and hearing) disorders found in the mentally retarded collectively."

If retarded citizens, particularly severely handicapped citizens, are to function with some degree of success in the mainstream of our society, they must be taught the language skills necessary to communicate effectively in a variety of social, recreational, and occupational settings (Sontag, Burke & York, 1973). If language training is not effective, the probability of ultimate adjustment to a public living environment would be low. Recent studies have suggested, however, that language training can be effective. Bricker and Bricker (1971); McLean, Yoder and Schiefelbusch (1972); and Schiefelbusch, Copeland and Smith (1967) have reported programs demonstrating that severely handicapped children can benefit from language training if instructional efforts are structured, precisely sequenced, and used simultaneously with appropriate reinforcement principles.

One important communication skill which is often deficient in retarded children is the ability to ask and answer questions appropriately. Questions are an indispensable part of most linguistic transactions. A child can learn much through the questions he asks and adults can become knowledgeable about much of what a child comprehends by asking questions. Of crucial importance are skills related to "wh" questions (i.e., questions introduced by an interrogative word such as what, where, who, when and why). Unfortunately, these skills appear difficult for severely handicapped students to acquire. This apparent difficulty may be a function of the specific semantic and syntactic constraints associated with responses to "wh" questions. For example, a "who" question must be answered semantically by a response that refers to a person and syntactically by a noun phrase or a pronoun.

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The classroom teacher who developed this program observed that her students did not answer "wh" questions correctly in a variety of situations. This deficit first became apparent when the teacher questioned students about the content of stories in preprimer reading books. In addition, it was determined that in situations requiring oral communication, students often did not answer "wh" questions with correct semantic and syntactic information. For example, when asked, "Who is playing the piano?", students often failed to respond consistently with a person's name or a pronoun. In order to develop the students' abilities to answer questions about the content of reading material, it seemed essential that the students first learn to answer "wh" questions in oral communication. Thus, teaching the students to respond correctly to at least "who" questions became one major objective of this program.

In addition to skills related to "who" questions, the pronoun system is another aspect of language which is often deficient in language delayed children (Waryas, 1973). In order to use pronouns correctly, students must learn what pronouns mean (i.e., what words they refer to), which pronoun to select for use in a particular situation, and when not to use pronouns at all. It was determined that the students rarely used pronouns either in response to direct questions or in less structured communications. In fact, "I" appeared the only pronoun used and its use seemed quite limited and was oftentimes incorrect. When students referred to themselves or their classmates, they would most frequently use proper names instead of pronouns (e.g., "Who wants juice?"; "John does."). In addition, the teacher noticed that although the students were taught to label pronouns contained in their preprimer reading books, they had difficulty delineating the persons to which the pronouns referred. Thus, in addition to teaching students to respond correctly to "who" questions, a second major objective was to teach students to use singular subject pronouns in a semantically and syntactically acceptable manner.

In summary, this program is an attempt to organize and teach several basic language and communication skills and to provide an instructional model for the development of selected pronoun usage skills of severely handicapped students. In order to communicate the relevant components of the instructional program, as well as to delineate the specific skills required, a detailed task analysis follows:

Phase I: Teaching students to, or verifying that students could, imitate selected one, two, and three word verbal responses.

Part 1 - Teaching students to, or verifying that students could, imitate one word verbal responses (e.g., "I").
Part 2 - Teaching students to, or verifying that students could, imitate two word verbal responses (e.g., "I am").
Part 3 - Teaching students to, or verifying that students could, imitate three word verbal responses (e.g., "I am standing.").

Phase II: Teaching students to perform actions in response to verbal cues, to visually discriminate actions, and to label actions.

Part 1 - Teaching students to perform actions in response to verbal cues (e.g., "Show me standing.").
Part 2 - Teaching students to visually discriminate actions (e.g., "Touch someone standing.").
Part 3 - Teaching students to label actions (e.g., "What is John doing?").

Phase III: Teaching students to visually discriminate themselves, the teacher, and classmates in response to name cues.

Part 1 - Teaching students to visually discriminate themselves in response to a name cue (e.g., "John, touch John.").
Part 2 - Teaching students to visually discriminate the teacher in response to a name cue (e.g., "John, touch Ms. Swetlik.").
Part 3 - Teaching students to visually discriminate classmates in response to name cues (e.g., "John, touch Peggy.").
Part 4 - Teaching students to visually discriminate themselves, the teacher, and classmates in response to name cues (e.g., "John, touch John, Ms. Swetlik, and Peggy.").

Phase IV: Teaching students to visually discriminate males and females in response to 3rd person singular subject pronoun cues.

Part 1 - Teaching students to visually discriminate males in response to the 3rd person singular subject pronoun cue "he" (i.e., "Touch a he.").
Part 2 - Teaching students to visually discriminate females in response to the 3rd person singular subject pronoun cue "she" (i.e., "Touch a she.").
Part 3 - Teaching students to visually discriminate males and females in response to the 3rd person singular subject pronoun cues "he" and "she" (i.e., "Touch a he."; "Touch a she.").

Phase V: Teaching students to make proper name responses to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns.

Part 1 - Teaching students to label the teacher in response to "who" questions containing the 1st person singular subject pronoun "I" (i.e., "Who am I?").
Part 2 - Teaching students to label themselves in response to "who" questions containing the 2nd person singular subject pronoun "you" (i.e., "Who are you?").
Part 3 - Teaching students to label the teacher and themselves in response to "who" questions containing the 1st and 2nd person singular subject pronouns "I" and "you" (i.e., "Who am I?"; "Who are you?").
Part 4 - Teaching students to label male classmates in response to "who" questions containing the 3rd person singular subject pronoun "he" (i.e., "Who is he?").
Part 5 - Teaching students to label female classmates in response to "who" questions containing the 3rd person singular subject pronoun "she" (i.e., "Who is she?").
Part 6 - Teaching students to label male and female classmates in response to "who" questions containing the 3rd person singular subject pronouns "he" and "she" (i.e., "Who is he?"; "Who is she?").
Part 7 - Teaching students to label themselves, the teacher, and male and female classmates in response to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns (i.e., "Who am I?"; "Who are you?"; "Who is he/she?").

Phase VI: Teaching students to respond to "who-doing" questions with the 1st person singular subject pronoun and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing.").

Phase VII: Teaching students to respond to "who-doing" questions with the 2nd person singular subject pronoun and present progressive verbs (e.g., Q: "Who is standing?" A: "You are standing.").

Phase VIII: Teaching students to respond to "who-doing" questions with the 1st and 2nd person singular subject pronouns and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing." Q: "Who is standing?" A: "You are standing.").

Phase IX: Teaching students to respond to "who-doing" questions with 3rd person singular subject pronouns and present progressive verbs.

Part 1 - Teaching students to respond to "who-doing" questions with the 3rd person singular subject pronoun "he" (e.g., Q: "Who is standing?" A: "He is standing.").

Part 2 - Teaching students to respond to "who-doing" questions with the 3rd person singular subject pronoun "she" (e.g., Q: "Who is standing?" A: "She is standing.").

Part 3 - Teaching students to respond to "who-doing" questions with the 3rd person singular subject pronouns "he" and "she" (e.g., Q: "Who is standing?" A: "He/She is standing.").

Phase X: Teaching students to respond to "who-doing" questions with 1st, 2nd, and 3rd person singular subject pronouns and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing." Q: "Who is standing?" A: "You are standing." Q: "Who is standing?" A: "He/She is standing.").

Examination of the task analysis should make several program parameters salient: First, "who" questions were used rather than other "wh" question forms. "Who" questions were selected because of the following considerations:

a) The students had demonstrated the skills necessary to answer many "yes-no," "what + be," "what + do," and "what kind" questions and did so frequently in classroom situations. Thus, "who" questions seemed a logical choice according to the postulated developmental sequence of question acquisition skills presented by Yoder (1972).

b) Beginning reading and pictorial material, because of the emphasis on characters and conversation, is replete with content appropriate for "who" questions. It was intended that acquiring skills required to answer "who" questions would better prepare students for development of more complex reading comprehension skills.

Second, the students were required to answer "who" questions with pronoun responses. Pronoun responses were required because:

a) The students rarely used pronouns in their speech;

b) Understanding and correct usage of pronouns are skills which many severely handicapped students must be systematically taught; and

c) Acquiring skills in pronoun usage would probably facilitate the correct delineation of persons to which pronouns referred in reading materials.

Third, the students were required to make complete three word sentence responses containing a pronoun and a present progressive verb (e.g., "I am standing."). This response form was required because:

a) The students had exhibited the ability to use three word verbal chains but did not normally use them in unstructured classroom settings;

b) According to Dale (1972), the present progressive is the first verb inflection to be acquired in a normal language developmental sequence; and

c) Repeated practice with the sentence forms "I am _____"; "You are _____"; "He is _____"; and "She is _____" might contribute to the development of a strategy for generating complete sentence responses to "wh" questions which contain other verbs in other situations.

Fourth, the students seemed most interested in discussions about persons in the immediate classroom environment. Because of this already established interest, it was decided to ask "who" questions about the students and the teacher before substituting pictures or printed material.

Finally, the skills necessary to complete each component of the program were empirically verified through criterion measurement.

METHOD

Students (*S*s)

The 8 *S*s involved were enrolled in a public school program for trainable level retarded students. *S*s ranged in chronological age from 6 years 10 months to 11 years 11 months ($\bar{X} = 8.9$) and in MA from 3 years 8 months to 5 years 5 months ($\bar{X} = 4.4$). (See Appendix A)

Psychological reports indicated that *S*s had obtained IQ scores on the Stanford-Binet that ranged from 37 to 56 ($\bar{X} = 49.13$). Years in public school as of September, 1973, ranged from 1 to 4 ($\bar{X} = 2.7$).

The following diagnostic labels and descriptive statements were extracted from cumulative folders: "mongoloid," "trainable," "moderately retarded," "hyperactive but controllable," "self-stimulating behaviors," "displays temper outbursts," and "severe vision impairment which will interfere with progress in school."

The *S*s' teachers during the past few years in school have added the following comments to the files: "difficulty gaining eye contact," "difficulty following directions," "over-stimulated," and "unable to verbalize discriminations which are well established in her behavioral repertoire."

The 8 Ss were divided into 2 instructional groups of 4 (Groups A & B). All instruction was conducted as a regular class activity. Each group participated in the program for at least 20 minutes per day, 4 days per week. While Group A (Ss 1, 2, 3, & 4) was seated with the teacher (T) on one side of the classroom, Group B (Ss 5, 6, 7, & 8) received phonics instruction from a university practicum student, and vice versa.

Instructional Materials and Arrangements

Phase I: Teaching students to, or verifying that students could, imitate selected one, two, and three word verbal responses.

Parts 1, 2, and 3

Materials: The following materials were used in Parts 1, 2, and 3: Mimeographed grid type data sheets[2] were constructed and used in all three parts of Phase I. Sufficient space was allowed to write out all responses.

Arrangement: The following instructional arrangement was used in Parts 1, 2, and 3: 4 Ss were seated in chairs arranged in a semi-circle. T also sat in a chair facing Ss.

Phase II: Teaching students to perform actions in response to verbal cues, to visually discriminate actions, and to label actions.

Part 1

Materials: The following materials were used in Part 1: Table, chair, scissors, comb, zipping board, preprimer reading book, pieces of construction paper, and data sheets.

Arrangement: The following instructional arrangement was used in Part 1: T designated a part of the classroom as the Action Corner. This corner consisted of a chair and a table upon which were placed the 5 objects described above. Five additional chairs were arranged facing the Action Corner and T and 4 Ss sat in them.

Part 2

Materials: The following materials were used in Part 2: A table, 2 chairs, the 5 objects listed in Part 1, and data sheets.

Arrangement: The instructional arrangement for Part 2 was the same as for Part 1 with the exception that an additional chair was placed in the Action Corner. Again, 4 Ss and T were seated facing the Action Corner.

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[2] Examples of all data sheets are presented in Appendix B.

Part 3

Materials: The following materials were used in Part 3: The 5 objects listed in Part 1 and data sheets.

Arrangement: The instructional arrangement for Part 3 was the same as for Part 1.

Phase III: Teaching students to visually discriminate themselves, the teacher, and classmates in response to name cues.

Parts 1, 2, 3, and 4

Materials: The following materials were used in Parts 1, 2, 3, and 4: Chairs for T and each S and data sheets.

Arrangement: The following instructional arrangement was used in Parts 1, 2, 3, and 4: 4 Ss were seated in chairs arranged in a semi-circle. T also sat in a chair facing Ss.

Phase IV: Teaching students to visually discriminate males and females in response to 3rd person singular subject pronoun cues.

Parts 1, 2, and 3

Materials: The following materials were used in Parts 1, 2, and 3: Chairs for T and each S, 2 additional Ss (1 male and 1 female), and 2 chairs for the Action Corner.

Arrangement: The following instructional arrangement was used for Parts 1, 2, and 3: Two additional Ss (1 male and 1 female) were secured. These Ss did not receive direct instruction but were used to form the 2 male-female pairs needed for the required gender discriminations. 6 Ss and T were seated facing the Action Corner. Two chairs were placed in the Action Corner and the table was removed.

Phase V: Teaching students to make proper name responses to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns.

Parts 1, 2, and 3

Materials: The following materials were used in Parts 1, 2, and 3: Chairs for T and each S and data sheets.

Arrangement: The following instructional arrangement was used for Parts 1, 2, and 3: 4 Ss were seated in chairs facing T, who was also seated.

Part 4

Materials: The following materials were used in Part 4: Chairs for each S and T, an additional male S, and data sheets.

Arrangement: The following instructional arrangement was used for Part 4: An additional male S was secured. He did not receive direct instruction but was needed so that the other 2 male Ss could make the gender discriminations required in Part 4. 5 Ss were seated in their chairs facing T, who was also seated.

Part 5

Materials: The following materials were used in Part 5: Chairs for each *S* and *T*, an additional female *S*, and data sheets.

Arrangement: The following instructional arrangement was used in Part 5: An additional female *S* was added to the group. She did not receive instruction but was needed so that the other 2 female *S*s could make the gender discriminations required in Part 5. 5 *S*s were seated in their chairs facing *T*, who was also seated.

Parts 6 and 7

Materials: The following materials were used in Parts 6 and 7: Chairs for *T* and each *S*, an additional male and female *S*, and data sheets.

Arrangement: The following instructional arrangement was used in Parts 6 and 7: An additional male and female *S* were added to the group. 6 *S*s were seated in chairs in a semi-circle facing *T*, who was also seated.

Phase VI: Teaching students to respond to "who-doing" questions with the 1st person singular subject pronoun and present progressive verbs.

Phase VII: Teaching students to respond to "who-doing" questions with the 2nd person singular pronoun and present progressive verbs.

Phase VIII: Teaching students to respond to "who-doing" questions with the 1st and 2nd person singular subject pronouns and present progressive verbs.

Phases VI, VII, and VIII

Materials: The following materials were used in Phases VI, VII, and VIII: A table and chair, the 5 objects listed in Phase II, and data sheets.

Arrangement: The following instructional arrangement was used in Phases VI, VII, and VIII: A chair and table were placed in the *Action Corner*. The five objects listed in Phase II were placed on the table. Five additional chairs were arranged facing the *Action Corner* and *T* and 4 *S*s sat in them.

Phase IX: Teaching students to respond to "who-doing" questions with 3rd person singular subject pronouns and present progressive verbs.

Part 1

Materials: The following materials were used in Part 1: A table and a chair, the 5 objects listed in Phase II, an additional male *S*, and data sheets.

Arrangement: The following instructional arrangement was used in Part 1: A chair and table were placed in the *Action Corner*. Five objects were placed on the table. Six additional chairs were arranged in a semi-circle facing the *Action Corner* and *T* and 5 *S*s sat in them.

Part 2

Materials: The following materials were used in Part 2: A table and a chair, the 5 objects listed in Phase II, an additional female S, and data sheets.

Arrangement: The following instructional arrangement was used in Part 2: A female S was added to the group. The arrangement of the chairs and the Action Corner was the same as in Part 1.

Part 3

Materials: The following materials were used in Part 3: A table and a chair, the 5 objects listed in Phase II, an additional male and female S, and data sheets.

Arrangement: In Part 3 two Ss (1 male and 1 female) were added to the group. Seven chairs were arranged in a semi-circle facing the Action Corner and T and 6 Ss sat in them. A chair and a table were placed in the Action Corner. Five objects were placed on the table.

Phase X: Teaching students to respond to "who-doing" questions with 1st, 2nd, and 3rd person singular subject pronouns and present progressive verbs.

The materials and instructional arrangement used in Phase X were exactly the same as those used in Phase IX, Part 3.

Graphs and Tangible Consequences: Individual graphs were constructed for each S. These graphs depicted the number of correct responses across trials for each part of each phase of the program. Social praise was dispersed immediately after each correct response. In addition, each S was presented with a consumable (M & M, pretzel, peanut butter cereal, etc.) if he or she responded correctly to the first cue provided by T in each part of each phase.

Teaching Design and Procedures: Phase I - Teaching Ss to, or verifying that Ss could, imitate selected one, two, and three word verbal responses.

In Phases VI-X Ss would be required to articulate appropriate pronouns and present progressive verbs in order to answer "who-doing" questions correctly. Thus, it was decided to verify that Ss could make the required three component responses prior to Phase VI.

Phase I was divided into 3 parts. The objective of Part 1 was to teach Ss to imitate selected one word verbal responses.[3] In Part 2 Ss were taught to imitate selected 2 word verbal responses, if baseline data revealed that such teaching was necessary. In Part 3 Ss were taught to imitate selected 3 word responses.

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[3] The ability to imitate single word verbal responses was a prerequisite for this program. If baseline data revealed Ss who were not able to do so, those Ss would have been placed in an imitative speech program designed to develop verbal imitation skills.

Baseline measures of the skills required in all three parts were obtained before teaching on Part 1 was initiated.

The imitative cues used in Part 3 were grouped into four sets of six and each set was taught separately. When Ss reached criterion on the 4 individual sets, the sets were combined. The instructional program for Phase I was organized as follows:

A. Baseline Parts 1, 2, and 3
B. Teach Part 1
C. Teach Part 2
D. Teach Part 3, Set I
E. Teach Part 3, Set II
F. Teach Part 3, Set III
G. Teach Part 3, Set IV
H. Rebaseline Part 3, Sets I, II, III, and IV

Baseline procedures - Parts 1, 2, and 3

Baseline measures of the ability of Ss to perform the tasks required in Part 1 were obtained in the following manner: Ss were seated facing T. T looked at S_1 and said, "S_1, say this word. Say 'I.'" Regardless of S_1's response, T said, "Thank you." T recorded a "+" on the data sheet for a correct response and a "-" for an incorrect response or no response. T then presented a different imitative cue to S_2, etc. Ss were given two opportunities to respond to each of the 13 imitative cues.

Baseline procedures as described for Part 1 were also used to determine each S's ability to respond to the verbal cues contained in Parts 2 and 3.

Teaching Procedures

Part 1: Teaching Ss to, or verifying that Ss could, imitate one word verbal responses (e.g., "I").

If baseline measures suggested that Ss could not imitate one word responses, the following procedures were implemented:

Step 1 - Ss were seated facing T. T looked at S_1 and said, "S_1, say this word. Say 'I.'" If S_1 correctly matched the behavior modeled by saying, "I," T smiled, said, "Good," delivered a consumable consequence, recorded a correct response, and proceeded to implement the same procedures with S_2, etc.

Step 2 - If S_1 did not imitate "I" (within 5 seconds), T said, "No," and repeated the cue, "S_1, say this word. Say 'I.'" If S_1 correctly imitated T's verbal model, T said, "Good," recorded "M_2" (second model), and proceeded to S_2, etc.

Step 3 - If S_1 still did not correctly imitate the verbal model (within 5 seconds), T said, "No," and repeated the cue, "S_1, say this word. Say 'I.'" If S_1 responded correctly, T said, "Good," recorded "M_3" (third model), and proceeded to S_2.

Step 4 - If S_1 still did not correctly imitate the verbal model, T said, "No! I wanted you to say 'I,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to S_2.

When necessary, T proceeded through Step 4 with S_1 before proceeding to Step 1 with S_2. However, it should be noted that (a) Steps 3 and 4 were implemented only once before T proceeded to S_2; and (b) on subsequent trials, instruction with S_1 began on Step 1. These procedures were followed until each S correctly imitated the 13 words in Part 1 under the conditions set forth in Step 1 on three consecutive occasions.

Part 2 - Teaching Ss to, or verifying that Ss could, imitate 2 word verbal responses (e.g., "I am").

Step 1 - Ss were seated facing T. T looked at S_1 and said, "S_1, say these words. Say 'I am.'" If S_1 correctly matched the behavior modeled, T smiled, said, "Good," presented a consumable consequence, recorded a correct response, and proceeded to implement the same procedure with S_2, etc.

Step 2 - If S_1 did not correctly imitate the verbal model (within 5 seconds), T said, "No! S_1, say these words. Say 'I am.'" If S_1 emitted a correct response, T said, "Good," recorded "M_2", and proceeded to Step 1 with S_2.

Step 3 - If S_1 did not correctly imitate the verbal response, T modeled the components of the response. That is, T said, "S_1, say 'I.'" When S_1 said, "I," T then said, "S_1, say 'am.'" When S_1 said, "am," T then said, "S_1, say 'I am.'" If S_1 matched the 2 component response correctly, T said, "Good," recorded "M_3", and proceeded to Step 1 with S_2.

Step 4 - If S_1 said the two words separately but did not say them together, a partial prompt was used in an attempt to have S_1 chain the words together. That is, T would say, "S_1, say these words. Say 'I am.'" If S_1 responded with "I" only, T then provided a prompt in the form of "a-a-a." If S_1 said, "am," T said, "Good," and recorded "P" (prompt) on the data sheet. S_1 was then asked to say "I am."

Step 5 - If $\underline{S}_1$ still did not correctly imitate the verbal model, T said, "No! I wanted you to say 'I am,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to Step 1 with $\underline{S}_2$.

These procedures were followed until each S correctly imitated each of the two word responses in Part 2 on three consecutive occasions without assistance from T.

Part 3 - Teaching Ss to, or verifying that Ss could, imitate 3 word verbal responses (e.g., "I am standing.").

Step 1 - Ss were seated facing T. T looked at $\underline{S}_1$ and said, "$\underline{S}_1$, say these words. Say 'I am standing.'" If $\underline{S}_1$ correctly matched the behavior modeled, T smiled, said, "Good," presented a consumable consequence, and recorded a correct response.

Step 2 - If $\underline{S}_1$ did not correctly imitate the verbal model (within 5 seconds), T said, "No," and repeated the cue "$\underline{S}_1$, say these words. Say 'I am standing.'" If $\underline{S}_1$ correctly imitated the verbal model, T said, "Good," recorded "M_2", and proceeded to Step 1 with $\underline{S}_2$.

Step 3 - If $\underline{S}_1$ did not correctly imitate the verbal model, T modeled the three components of the response independently. That is, T reinstated the procedures described in Part 2. After $\underline{S}_1$ correctly imitated the 3 components independently, T again modeled the 3 word response. If $\underline{S}_1$ matched the 3 word response correctly, T said, "Good," recorded "M_3", and proceeded to Step 1 with $\underline{S}_2$.

Step 4 - If $\underline{S}_1$ said the 3 words separately but did not say them in succession, a partial prompt was used to chain the words together. T said, "$\underline{S}_1$, say this word. Say 'I.'" If $\underline{S}_1$ said, "I," T said, "Good, now say 'I am.'" If $\underline{S}_1$ said, "I am," T said, "Good, now say 'I am standing.'" If $\underline{S}_1$ responded with "I am" only, T provided a prompt in the form of "st..." If $\underline{S}_1$ said, "standing," T said, "Good," and recorded "P" (prompt). $\underline{S}_1$ was then asked to say "I am standing."

Step 5 - If $\underline{S}_1$ still did not correctly imitate the verbal model, T said, "No! I wanted you to say 'I am standing,'" recorded an incorrect response, and proceeded to Step 1 with $\underline{S}_2$.

When necessary, T proceeded through Step 5 with $\underline{S}_1$ before initiating Step 1 with $\underline{S}_2$. However, it should be noted (a) that Steps 3 and 4 were implemented only once before T proceeded to $\underline{S}_2$, and (b) that subsequent instruction with $\underline{S}_1$ began on Step 1. These procedures were followed until each S imitated each of the three word responses on three consecutive occasions without assistance from T.

Rebaseline - Part 3, Sets I, II, III, and IV

T again used the Baseline procedures described in Phase I and recorded the performance of Ss on Sets I, II, III, and IV on two occasions.

Phase II: Teaching Ss to perform actions in response to verbal cues, to visually discriminate actions, and to label actions.

Phase II was designed to develop skills related to the performance of overt motor actions. Six actions (standing, waving, cutting, combing, reading, and zipping) were selected. The reasons for choosing these actions were as follows: (a) continuous movement was required; (b) they are relatively discrete; (c) they are actions frequently performed in classrooms and/or elsewhere in schools; and (d) Ss could perform these actions and answer questions simultaneously.

In Part 1 Ss were taught to perform actions in response to verbal cues (e.g., "Show me standing."). The present participle (e.g., standing) was used because that verb form would be required in order to answer questions in Phases VI-X correctly.

In Part 2 Ss were taught to visually discriminate a classmate who was performing one of the six actions. Finally, in Part 3 Ss were taught to label actions being performed by their classmates using the present participle.

The instructional program for Phase II progressed as follows:

A. Baseline Parts 1, 2, and 3
B. Teach Part 1
C. Teach Part 2
D. Teach Part 3

Baseline procedures - Parts 1, 2, and 3

Prior to instruction, baseline measures of the ability of Ss to perform the tasks required in Phase II, Parts 1, 2, and 3 were obtained in the following manner:

Part 1 - Ss were seated in their chairs facing the Action Corner. T looked at S_1 and said, "S_1, sit in the Action Corner," while pointing to the appropriate place. If S_1 did not respond, T physically guided S_1 until he/she was sitting in the chair located in the Action Corner. When S_1 was seated in the Action Corner, T said, "S_1, show me standing." Regardless of S_1's response, T said, "Thank you," and instructed S_1 to return to the group and sit down. T recorded a "+" on the data sheet for a correct response and a "-" for an incorrect response or no response. T then instructed S_2 to sit in the Action Corner and presented a different cue to S_2. Each S was given two opportunities to respond to the 6 verbal cues (i.e., "Show me standing, waving, cutting, combing, reading, and zipping.").

Part 2 - *S*s and *T* were seated facing the *Action Corner*. *T* looked at S_1 and S_2 and said, "S_1 and S_2, go and sit in the *Action Corner*." When *S*s 1 and 2 were seated in the 2 chairs in the *Action Corner*, *T* went to the *Action Corner* and whispered, "Show me standing," into the ear of S_1 and, "Show me waving," into the ear of S_2. If S_1 or S_2 did not respond appropriately, *T* physically guided them through the appropriate actions. While S_1 was standing and S_2 was waving, *T* walked over to S_3 and said, "Touch someone standing." Regardless of S_3's response, *T* said, "Thank you," and instructed S_3 to return to the group and sit down. *T* then recorded a "+" for a correct response (i.e., S_3 touched S_1) and a "-" for an incorrect response (e.g., S_3 touched S_2) or no response. *T* then presented the cue "Touch someone waving" to S_4. Each *S* was given two opportunities to respond to each of the six different actions.

Part 3 - *S*s and *T* were seated facing the *Action Corner*. *T* looked at S_1 and said, "S_1, go and sit in the *Action Corner*." When S_1 was seated appropriately, *T* went to the *Action Corner* and whispered, "Show me standing," into the ear of S_1. If S_1 did not respond, *T* physically guided S_1 to a standing position. When S_1 was standing, *T* looked at S_2 and said, "What is S_1 doing?" Regardless of S_2's response, *T* said, "Thank you." *T* then recorded a "+" for a correct response (e.g., S_2 said, "Standing") and a "-" for an incorrect response (e.g., S_2 said, "Waving") or no response. *T* then presented a different action cue to S_3. Each *S* was given two opportunities to label the six different actions as they were being performed by their classmates.

Teaching procedures

Part 1: Teaching Ss to perform actions in response to verbal cues (e.g., "Show me standing.").

Step 1 - *S*s and *T* were seated facing the *Action Corner*. *T* looked at S_1 and said, "S_1, sit in the *Action Corner*," while pointing to the appropriate place. When S_1 was seated in the *Action Corner*, *T* said, "S_1, show me standing." If S_1 responded correctly by standing, *T* said, "Good," recorded a correct response, presented a consumable consequence, and instructed S_1 to return to the group and sit down. *T* then instructed S_2 to sit in the *Action Corner*, etc.

Step 2 - If S_1 did not stand, *T* said, "Show me standing," and modeled the correct response. *T* then repeated the cue, "S_1, show me standing." If S_1 stood, *T* said, "Good," recorded "M" (*S* matched the modeled response), and instructed S_2 to perform a different action, etc.

Step 3 - If S_1 still did not stand, T went to S_1 and said, "S_1, show me standing," and physically guided the sitting student to a standing position. T said, "This is standing." T then told S_1 to return to the group, recorded "P" (prime) on the data sheet, and initiated Step 1 with S_2.

These procedures were followed until each S performed the six actions (i.e., standing, waving, cutting, combing, reading and zipping) in response to verbal cues on three consecutive occasions without the assistance of modeling or priming cues.

Part 2: Teaching Ss to visually discriminate actions (e.g., "Touch someone standing.").

Step 1 - Prior to instruction on Part 2 an additional chair was placed in the Action Corner and Ss and T were seated facing the Action Corner. T looked at S_1 and S_2 and said, "S_1 and S_2, go sit in the Action Corner." After Ss 1 and 2 were seated in the 2 chairs in the Action Corner, T whispered, "Show me standing," into the ear of S_1 and, "Show me waving," into the ear of S_2. While S_1 was standing and S_2 was waving, T walked over to S_3 and said, "Touch someone standing." If S_3 responded correctly by touching S_1, T smiled, said, "Good," recorded a correct response, and delivered a consumable consequence.

Step 2 - If S_3 did not respond correctly, T said, "No," repeated the cue, "S_3, touch someone standing," and modeled the correct response by going to the Action Corner and touching S_1. While touching S_1, T said, "Here is someone standing. What is S_1 doing?" If S_3 responded correctly, T said, "Good," then repeated the cue, "S_3, touch someone standing." If S_3 responded correctly, T said, "Good," recorded "M", and told S_3 to return to his/her seat. T then initiated Step 1 with S_4 using the cue "Touch someone waving."

Step 3 - If S_3 did not respond correctly to the modeling cues provided by T, he/she was primed through the correct response and "P" was recorded on the data sheet.

These procedures were followed until all priming and modeling cues were faded and Ss responded correctly to the three pairs of actions on three conseuctive occasions (i.e., standing-waving; cutting-combing; reading-zipping). It should be noted that each S was required to discriminate six different actions.

Part 3: Teaching Ss to label actions (e.g., "What is John doing?").

Step 1 - Ss and T were seated facing the Action Corner. T looked at S_1 and said, "S_1, go and sit in the Action Corner." When S_1 was seated appropriately, T went to the Action Corner and whispered, "Show me standing," into the ear of S_1. When S_1 was standing, T looked at S_2 and said, "What is S_1 doing?" If S_2 responded correctly by saying, "Standing," T said, "Good," recorded a correct response, delivered a consumable consequence, and presented a different action cue to S_3, etc.[4]

Step 2 - If S_2 did not respond correctly, T said, "No," repeated the cue, "What is S_1 doing?", and verbally modeled the correct response by saying, "Standing." T again repeated the cue, "S_2, what is S_1 doing?" If S_2 responded correctly, T smiled, said, "Good," recorded "M_1", and presented a different action cue to S_3, etc.

Step 3 - If S_2 made no response or did not correctly imitate the verbal model, T said, "No," repeated the cue, "S_2, what is S_1 doing? Say 'standing.'" If S_2 responded correctly, T provided only social consequences and recorded "M_2". S_3 was then given a different action cue, etc.

Step 4 - If S_2 made no response or an incorrect response, T said, "No! S_1 is standing," recorded an incorrect response, and terminated teaching for that trial. S_3 was then given a different action cue, etc.

These procedures were followed until each S labeled the 6 different actions as they were performed by classmates on three consecutive occasions (i.e., standing, waving, cutting, combing, reading and zipping).

Phase III: Teaching Ss to visually discriminate themselves, the teacher, and classmates in response to name cues.

The purpose of Phase III was to teach Ss to recognize the names of themselves, their classmates, and T by touching different persons in response to name cues. In Phase IV Ss would have to choose from their classmates those who could be referred to as a "he" and those who could be referred to as a "she." Since a pronoun may function as a noun substitute, it was decided to first teach the proper names for which the pronouns would later substitute. The purpose of Phase III was to communicate to Ss that T, the Ss themselves, and their classmates have proper names. Then in subsequent phases, pronouns would be introduced as another way of referring to the same persons.

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[4] It should be noted that "S_1 is standing."; "S_1 standing"; and "Standing" were all considered acceptable responses.

Phase III was divided into 4 parts. In Part 1 *S*s were required to touch themselves in response to their own name cues. In Part 2 *S*s were asked to touch *T* and in Part 3, their classmates. In Part 4 *S*s were required to touch themselves, *T*, and their classmates in response to name cues.

The instructional program for Phase III progressed as follows:

A. Baseline Parts 1, 2, 3, and 4
B. Teach Part 1
C. Teach Part 2
D. Teach Part 3
E. Teach Part 4

Baseline procedures - Parts 1, 2, 3, and 4

Part 1 - The baseline measures for Part 1 were obtained as follows: *S*s were seated facing *T*. *T* looked at S_1 and said, "S_1, touch S_1." Regardless of S_1's response, *T* said, "Thank you." *T* recorded a "+" for a correct response (i.e., S_1 touched himself) and a "-" for an incorrect response (e.g., S_1 touched S_2) or no response. *T* then presented a different cue to S_2 (i.e., "S_2, touch S_2."). These procedures were followed until *S*s were given two opportunities to touch themselves in response to the appropriate name cues.

Part 2 - The baseline measures for Part 2 were obtained as follows: *S*s were seated facing *T*. *T* looked at S_1 and said, "S_1, touch *T* (Ms. Swetlik)." Regardless of S_1's response, *T* said, "Thank you," recorded the response appropriately on the data sheet, and presented the same cue to S_2. These procedures were followed until each *S* was given two opportunities to touch *T* in response to the cue "Touch Ms. Swetlik."

Part 3 - The baseline measures for Part 3 were obtained as follows: *S*s were seated facing *T*. *T* looked at S_1 and said, "S_1, touch S_2." Regardless of S_1's response, *T* said, "Thank you," and recorded the response appropriately on a data sheet. *T* then presented a different verbal cue to S_2 (e.g., "S_2, touch S_3."), etc. These procedures were followed until each *S* was given two opportunities to touch the other 3 *S*s in response to the appropriate name cues.

Part 4 - Baseline measures for Part 4 were obtained as follows: *S*s were seated facing *T*. *T* looked at S_1 and said, "S_1, touch S_1." Regardless of S_1's response, *T* said, "Thank you," recorded the response appropriately, and presented a different cue to S_2 (e.g., "S_2, touch *T*."), etc. These procedures were followed until each *S* was given two opportunities to respond to the 5 name cues (i.e., "Touch *T*, S_1, S_2, S_3, and S_4").

Teaching procedures

Part 1: Teaching Ss to visually discriminate themselves in response to a name cue (e.g., "John, touch John.").

Step 1 - Ss were seated facing T. T looked at S_1 and said, "S_1, touch S_1." If S_1 responded correctly by touching himself, T smiled, said, "Good," presented a consumable consequence, recorded a correct response, and looked at S_2, etc.

Step 2 - If S_1 did not respond correctly, T said, "No," repeated the cue, "Touch S_1," and modeled the correct response by touching S_1 and saying, "This is S_1." T then repeated the cue, "S_1, touch S_1." If S_1 touched himself, T smiled, said, "Good," recorded "M" on the data sheet, and presented S_2's name cue to S_2, etc.

Step 3 - If S_1 did not imitate T, T said, "No," repeated the cue, "S_1, touch S_1," and primed the response by physically guiding S_1 through the touching response. T said, "Good," recorded "P" on the data sheet, looked at S_2, etc. On each subsequent trial, T decreased the amount of physical prompting until S_1 responded to the imitative cue provided by T. Subsequently, imitative cues were faded.

Instruction continued until each S responded correctly to his/her name cue on three consecutive occasions.

Part 2: Teaching Ss to visually discriminate the teacher in response to a name cue (e.g., "John, touch Ms. Swetlik.").

Step 1 - Ss were seated facing T. T looked at S_1 and said, "S_1, touch T (Ms. Swetlik)." If S_1 responded correctly, T smiled, said, "Good," presented a consumable consequence, recorded a correct response, and looked at S_2, etc.

Step 2 - If S_1 did not respond correctly, T said, "No," repeated the cue, "S_1, touch T," modeled the correct response by touching herself, and said, "This is T." Then T repeated the cue, "S_1, touch T." If S_1 touched T, T smiled, said, "Good," recorded "M" on the data sheet, and looked at S_2, etc.

Step 3 - If S_1 did not imitate T, T said, "No," repeated the cue, "S_1, touch T," and primed the response by physically guiding S_1 through the touching response. T said, "Good," recorded "P" on the data sheet, and looked at S_2, etc.

These procedures were followed until all priming and imitative cues were faded and each S responded correctly to T's name cue on three consecutive occasions.

Part 3: *Teaching Ss to visually discriminate classmates in response to name cues (e.g., "John, touch Peggy.")*.

Step 1 - *Ss* were seated facing *T*. *T* looked at S_1 and said, "S_1, touch S_2." If S_1 responded correctly by touching S_2, *T* smiled, said, "Good," presented a consumable consequence, recorded a correct response, and looked at S_2, etc.

Step 2 - If S_1 did not respond correctly, *T* said, "No," repeated the cue, "S_1, touch S_2," modeled the correct response by touching S_2, and said, "This is S_2." *T* then repeated the cue, "S_1, touch S_2." If S_1 touched S_2, *T* smiled, said, "Good," recorded "M" on the data sheet, and looked at S_2, etc.

Step 3 - If S_1 did not imitate *T*, *T* said, "No," repeated the cue, "S_1, touch S_2," and physically guided S_1 through the touching response. *T* then said, "Good," recorded "P" on the data sheet, and looked at S_2, etc.

These procedures were followed until all priming and imitative cues were faded and each *S* responded correctly to each name cue on three consecutive occasions.

Part 4: *Teaching Ss to visually discriminate themselves, the teacher, and classmates in response to name cues (e.g., "John, touch John, Ms. Swetlik, and Peggy.")*.

Step 1 - *Ss* were seated facing *T*. *T* looked at S_1 and said, "S_1, touch S_1." If S_1 responded correctly, *T* smiled, said, "Good," presented a consumable consequence, and gave a different name cue to S_2, etc.

Step 2 - If S_1 did not respond correctly, *T* said, "No," repeated the cue, "S_1, touch S_1," modeled the correct response, and said, "This is S_1." *T* then repeated the cue, "S_1, touch S_1." If S_1 touched S_1, *T* smiled, said, "Good," recorded "M" on the data sheet, and presented a different name cue to S_2, etc.

Step 3 - If S_1 did not imitate *T*, *T* said, "No," repeated the cue, "S_1, touch S_1," and physically guided S_1 through the touching response. *T* then said, "Good," recorded "P" on the data sheet, and presented a different name cue to S_2, etc.

These procedures were followed until all priming and modeling cues were faded and each *S* responded correctly to each name cue (i.e., him/herself, *T*, and 3 classmates) on three consecutive occasions.

Phase IV: Teaching Ss to visually discriminate males and females in response to 3rd person singular subject pronoun cues (e.g., "Touch a he."; "Touch a she.").

The objective of Phase IV was to teach Ss to touch a male classmate in response to the cue "Touch a he" and to touch a female classmate in response to the cue "Touch a she." The other 2 pronouns, "I" and "you", are relative to a given situation (speaker and listener) and could not be taught in quite as straightforward a manner.

Phase IV was divided into three parts. In Part 1 Ss were required to touch a male classmate in response to the cue "Touch a he" when presented with 2 different male-female pairs. After Ss reached criterion on Part 1, they were required to touch a female classmate when T said, "Touch a she." Finally, in Part 3 T presented the two cues in an alternating fashion and Ss were required to touch either a "he" or a "she."

In this phase T attempted to develop the general rule: "If someone is a boy (man), I call him a he. If someone is a girl (woman), I call her a she."

The design for Phase IV was as follows:

A. Baseline Parts 1, 2, and 3
B. Teach Part 1
C. Teach Part 2
D. Teach Part 3

Baseline procedures - Parts 1, 2, and 3

Part 1 - The baseline measures for Phase IV, Part 1, were obtained as follows: 6 Ss and T were seated in their chairs facing the Action Corner.[5] T looked at S_1 and S_2 and said, "S_1 and S_2, go and sit in the Action Corner." When Ss 1 and 2 were seated in the 2 chairs in the Action Corner, T walked over to S_3 and said, "Touch a he." Regardless of S_3's response, T said, "Thank you." T recorded a "+" for a correct response (i.e., S_3 touched S_1) and a "-" for an incorrect response (e.g., S_3 touched S_2) or no response. T then initiated the same procedure with S_4 using a different male-female pair. Each S was given two opportunities to respond to the cue "Touch a he" when presented with two different male-female pairs.[6]

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[5] Before baseline measures were obtained in Phase IV, two students (1 male and 1 female) were added to the group. These Ss did not receive direct instruction but were used to form the two male-female pairs needed for the gender discriminations required in this phase.

[6] Males: S_1, S_3, S_5 Females: S_2, S_4, S_6

Part 2 - Baseline measures for Phase IV, Part 2, were obtained in the same manner as Part 1 except that each S was presented with a male-female pair and was told to "Touch a she."

Part 3 - Lastly, baseline measures of the ability of Ss to perform the tasks required by Phase IV, Part 3, were obtained in the following manner: Ss and T were seated in their chairs facing the Action Corner. T looked at S_1 and S_2 and said, "S_1 and S_2, go and sit in the Action Corner." When Ss 1 and 2 were seated in the 2 chairs in the Action Corner, T walked over to S_3 and said, "Touch a he." Regardless of S_3's response, T said, "Thank you." T recorded a "+" for a correct response (i.e., S_3 touched S_1) and a "-" for an incorrect response (e.g., S_3 touched S_2) or no response. T then presented a different pronoun cue to S_4 (e.g., "S_4, touch a she.") using a different male-female pair. Each S was given two opportunities to respond to each of the cues "Touch a he" and "Touch a she" when presented with two different male-female pairs.

Teaching procedures

Part 1: Teaching Ss to visually discriminate males in response to the 3rd person singular subject pronoun cue "he" (i.e., "Touch a he.").

Step 1 - Ss and T were seated in their chairs facing the Action Corner. T looked at S_1 and S_2 and said, "S_1 and S_2, go and sit in the Action Corner." After Ss 1 and 2 were seated in the 2 chairs in the Action Corner, T walked over to S_3 and said, "Touch a he." If S_3 responded correctly, T smiled, said, "Good," recorded a correct response, and delivered a consumable consequence.

Step 2 - If S_3 did not respond correctly, T said, "No," repeated the cue, "Touch a he," and modeled the correct response by going to the Action Corner and touching S_1. While modeling the response, T said, "This is S_1. S_1 is a boy. Listen, I can say it another way. He is a boy. If he is a boy, I can call him a he. This is a he. S_3, is this a he?" If S_3 responded correctly, T said, "Good," and repeated the cue, "S_3, touch a he." If S_3 responded correctly by touching S_1, T said, "Good," recorded "M" on the data sheet, and told S_3 to return to his seat. T initiated Step 1 with S_4 using a different male-female pair.

Step 3 - If S_3 did not respond correctly to the modeled cues provided by T, he was primed through the correct response and "P" was recorded on the data sheet.

These procedures were followed until all priming and modeling cues were faded and each *S* responded correctly to the cue "Touch a he" when presented with two different male-female pairs on three consecutive occasions.

Part 2: *Teaching Ss to visually discriminate females in response to the 3rd person singular subject pronoun cue "she" (i.e., "Touch a she.")*.

Step 1 - *S*s and *T* were seated in their chairs facing the *Action Corner*. *T* looked at $\underline{S}_1$ and $\underline{S}_2$ and said, "$\underline{S}_1$ and $\underline{S}_2$, go and sit in the *Action Corner*." After *S*s 1 and 2 were seated in the *Action Corner*, *T* walked over to $\underline{S}_3$ and said, "Touch a she." If $\underline{S}_3$ responded correctly by touching $\underline{S}_2$, *T* smiled, said, "Good," recorded a correct response, and delivered a consumable consequence, etc.

Step 2 - If $\underline{S}_3$ did not respond correctly, *T* said, "No," repeated the cue, "Touch a she," and modeled the correct response by going to the *Action Corner* and touching $\underline{S}_2$. While modeling the response, *T* said, "This is $\underline{S}_2$. $\underline{S}_2$ is a girl. Listen, I can say it another way. *She* is a girl. If she is a girl, I can call her a *she*. This is a *she*. $\underline{S}_3$, is this a she?" If $\underline{S}_3$ responded correctly, *T* said, "Good," and repeated the cue, "$\underline{S}_3$, touch a she." If $\underline{S}_3$ responded correctly by touching $\underline{S}_2$, *T* said, "Good," recorded "M" on the data sheet, and told $\underline{S}_3$ to return to his seat. *T* then initiated Step 1 with $\underline{S}_4$ using a different male-female pair.

Step 3 - If $\underline{S}_3$ did not respond correctly to the modeled cues provided by *T*, he was primed through the correct response and "P" was recorded on the data sheet.

These procedures were followed until all priming and modeling cues were faded and each *S* responded correctly to the cue "Touch a she" when presented with two different male-female pairs on three consecutive occasions.

Part 3: *Teaching Ss to visually discriminate males and females in response to the 3rd person singular subject pronoun cues "he" and "she" (i.e., "Touch a he."; "Touch a she.")*.

Step 1 - *S*s and *T* were seated in their chairs facing the *Action Corner*. *T* looked at $\underline{S}_1$ and $\underline{S}_2$ and said, "$\underline{S}_1$ and $\underline{S}_2$, go and sit in the *Action Corner*." When *S*s 1 and 2 were seated in the 2 chairs in the *Action Corner*, *T* walked over to $\underline{S}_3$ and said, "Touch a he." If $\underline{S}_3$ responded correctly by touching $\underline{S}_1$, *T* smiled, said, "Good," recorded a correct response, and delivered a consumable consequence. *T* then initiated Step 1 with $\underline{S}_4$ using the cue "Touch a she" and a different male-female pair.

Step 2 - If S_3 did not respond correctly, T said, "No," repeated the cue, "Touch a he (or she)," and modeled the correct response. While modeling the correct response, T repeated the cues given in Step 2 of Parts 1 or 2. T then said, "S_3, touch a he (or she)." If S_3 responded correctly, T said, "Good," recorded "M" on the data sheet, and told S_3 to return to his seat. T then initiated Step 1 with S_4 using a different male-female pair.

Step 3 - If S_3 did not respond correctly to the modeled cues provided by T, he was primed through the correct response and "P" was recorded on the data sheet.

These procedures continued until all priming and modeling cues were faded and each S responded correctly to the cues "Touch a he" and "Touch a she" when presented with two different male-female pairs on three consecutive occasions.

Phase V: Teaching Ss to make proper name responses to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns.

In Phase V Ss were required to respond to "who" questions with the proper names of T, themselves, and male and female classmates. That is, T asked one of the following questions: "Who am I?"; "Who are you?"; "Who is he?"; or "Who is she?" Ss were required to answer by giving the first name or first and last names of the person referred to. Complete sentence responses (e.g., "I am John.") were not required but were considered correct if they contained the appropriate names.

There were two reasons for including Phase V in this program. First, in Phases VI-X Ss would be required to refer to themselves, T, and their classmates using the pronouns "I," "you," "he," and "she" respectively. Phase V was included to verify that Ss could give the proper names for which the pronouns would later stand.

Second, the proper use of "I" and "you" can be confusing to children, because these pronouns can be substitutes for a variety of proper nouns, depending on who is speaking. For example, a child, in referring to himself would say, "I am here today." But if T would refer to that same child, she would say, "Are you here today?" In Phase V Ss gave their own names in response to the question "Who are you?", and gave T's name in response to the question "Who am I?" Conversely, in Phases VI, VII, and VIII, Ss would use the pronoun "I" in reference to themselves and the pronoun "you" in reference to T. Thus, Ss were required to differentially respond to "I" and "you."

Phase V was divided into 7 parts. In Part 1 Ss were taught to label T in response to the question "Who am I?" In Part 2 they were taught to give their own names in response to the question

"Who are you?" In Part 3 T alternately asked Ss to label either T or themselves. In the same manner Ss were taught to label their male classmates in Part 4 when asked, "Who is he?" and their female classmates in Part 5 when asked, "Who is she?" In Part 6 T alternately asked, "Who is he?" or "Who is she?" Finally, in Part 7 Ss were required to label T, themselves, and their male and female classmates when asked appropriate questions.

The design for Phase V was as follows:

A. Baseline Parts 1-7
B. Teach Part 1
C. Teach Part 2
D. Teach Part 3
E. Teach Part 4
F. Teach Part 5
G. Teach Part 6
H. Teach Part 7

Baseline procedures - Parts 1-7

Part 1 - The baseline measures for Part 1 were obtained as follows: Ss were seated in their chairs facing T. T looked at S_1 and said, "Who am I?" Regardless of S_1's response, T said, "Thank you." T recorded a "+" for a correct response (e.g., S_1 said, "Ms. Swetlik") and a "-" for an incorrect response (e.g., S_1 said, "S_1") or no response. T then presented the same cue to S_2. Ss were given two opportunities to label T in response to the cue "Who am I?"

Part 2 - Baseline measures for Phase V, Part 2, were obtained in the same manner as Part 1 except that each S was given two opportunities to label himself in response to the cue "Who are you?"

Part 3 - Baseline measures for Phase V, Part 3, were obtained in the same manner as Part 1 except that each S was given two opportunities to label T and himself in response to the cues "Who am I?" and "Who are you?" It should be noted that each S was presented with only one of the two verbal cues in a single turn.

Part 4 - The baseline measures for Part 4 were obtained as follows: Ss were seated in their chairs facing T. T looked at S_1 and said, "Show me standing." When S_1 was standing, T locked at S_2 and said, "S_2, who is he?", pointing in the direction of S_1. Regardless of S_2's response, T said, "Thank you." T recorded a "+" for a correct response and a "-" for an incorrect response or no response. T then told a different male S to stand and presented the same verbal cue to S_3. Ss were given two opportunities to respond to the cue "Who is he?" when presented with two different male classmates.

Part 5 - Baseline measures for Phase V, Part 5, were obtained in the same manner as Part 4 except that each S was presented with a female classmate and asked, "Who is she?"

Part 6 - Baseline measures for Phase V, Part 6, were obtained in the same manner as Parts 4 and 5 except that each S was given two opportunities to label two male and female classmates in response to the cues "Who is he?" and "Who is she?" It should be noted that each S was presented with only one of the two verbal cues in a single turn.

Part 7 - Lastly, baseline measures of the ability of Ss to perform the tasks required by Phase V, Part 7, were obtained in the following manner: Ss were seated in their chairs facing T. T looked at S_1 and said, "Who am I?" Regardless of S_1's response, T said, "Thank you." T recorded a "+" for a correct response and a "-" for an incorrect response or no response. T then presented a different cue to S_2 (e.g., "Who are you?"). Ss were given two opportunities to label T, themselves, and two male and female classmates in response to the following cues: "Who am I?"; "Who are you?"; "Who is he?"; and "Who is she?"

Teaching procedures

Part 1: Teaching Ss to label the teacher in response to "who" questions containing the 1st person singular subject pronoun "I" (i.e., "Who am I?").

Step 1 - Ss were seated in their chairs facing T. T looked at S_1 and said, "S_1, who am I?" If S_1 responded correctly by saying, "Ms. Swetlik," T smiled, said, "Good," presented a consumable consequence, and recorded a correct response.[7]

Step 2 - If S_1 did not respond correctly, T said, "No," repeated the cue, "Who am I?", and modeled the correct response by saying, "Ms. Swetlik. I am Ms. Swetlik." T also touched herself to emphasize the word "I." T then repeated the cue, "S_1, who am I?" If S_1 imitated T and said, "Ms. Swetlik," T smiled, said, "Good," recorded "M_1" on the data sheet, and presented the same cue to S_2.

Step 3 - If S_1 did not imitate T, T said, "No," repeated the cue, "S_1, who am I? Say 'Ms. Swetlik' (or 'Swetlik')." If S_1 responded correctly, T said, "Good," recorded "M_2" on the data sheet, and presented the same cue to S_2.

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[7] Any one of the following responses was considered correct: "Swetlik"; "Ms. Swetlik"; "You (Ms.) Swetlik"; or "You are (Ms.) Swetlik."

Step 4 - If S_1 still made no response or an incorrect response, *T* said, "No! I am Ms. Swetlik," recorded an incorrect response, and terminated the teaching of S_1 for that trial. S_2 was then given the same cue.

These procedures were followed until each *S* labeled *T* in response to the cue "Who am I?" in three consecutive trials.

Part 2: *Teaching Ss to label themselves in response to "who" questions containing the 2nd person singular pronoun "you" (i.e., "Who are you?").*

Step 1 - *S*s were seated in their chairs facing *T*. *T* looked at S_1 and said, "Who are you?" If S_1 responded correctly by saying his name, *T* smiled, said, "Good," presented a consumable consequence, recorded a correct response, etc.[8]

Step 2 - If S_1 did not respond correctly, *T* said, "No," repeated the cue, "Who are you?", and modeled the correct response by saying, "You are S_1." *T* also pointed to S_1 to emphasize the word "you." *T* then repeated the cue and continued Step 2 as in Part 1.

Step 3 - If S_1 did not imitate *T*, *T* followed the procedures described in Step 3 of Part 1.

Step 4 - If S_1 made no response or an incorrect response, *T* followed the procedures described in Step 4 of Part 1.

These procedures were followed until each *S* labeled himself in response to the cue "Who are you?" in three consecutive trials.

Part 3: *Teaching students to label the teacher and themselves in response to "who" questions containing the 1st and 2nd person singular subject pronouns "I" and "you" (i.e., "Who am I?"; "Who are you?").*

Step 1 - *S*s were seated in their chairs facing *T*. *T* looked at S_1 and said, "S_1, who am I?" If S_1 responded correctly, *T* smiled, said, "Good," recorded a correct response, and delivered a consumable consequence. *T* then looked at S_2 and said, "Who are you?", etc.

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[8] Any one of the following responses was considered correct: "Karen"; "Karen Miller"; "I Karen"; "I Karen Miller"; "I am Karen."; or "I am Karen Miller."

Step 2 - If S_1 did not respond correctly to the verbal cue, T said, "No," repeated the cue, "Who am I?", and modeled the correct response, "Ms. Swetlik. I am Ms. Swetlik." T then repeated the cue. If S_1 responded correctly, T said, "Good," recorded "M_1" on the data sheet, and initiated Step 1 with S_2 using a different cue.

Step 3 - If S_1 did not imitate T, T said, "No," repeated the cue, and followed the procedures described in Step 3 of Part 1.

Step 4 - If S_1 still did not respond correctly, T followed the procedures described in Step 4 of Part 1.

These procedures were followed until each S labeled T and himself/herself in response to the cues "Who am I?" and "Who are you?" in three consecutive trials. Attempts were made to minimize the repetition of the same cue to different Ss on consecutive presentations.

Part 4: Teaching Ss to label male classmates in response to "who" questions containing the 3rd person singular subject pronoun "he" (i.e., "Who is he?").[9]

Step 1 - 5 Ss were seated in their chairs facing T. T looked at S_1 and said, "Show me standing." When S_1 was standing, T looked at S_2 and said, "S_2, who is he?", pointing in the direction of S_1. If S_2 responded correctly by saying S_1's name, T smiled, said, "Good," presented a consumable consequence, and recorded a correct response.[10] T then told S_1 to sit down and looked at S_3, etc.

Step 2 - If S_2 did not respond correctly, T said, "No," repeated the cue, "Who is he?", and modeled the correct response by saying, "He is S_1." T also pointed toward S_1 to emphasize the word "he." T then repeated the cue and continued Step 2 as described in Parts 1-3 above.

Step 3 - If S_2 did not imitate T, T followed the procedures described in Step 3 of Part 1.

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[9] Prior to instruction in Part 4 an additional male student (S_5) was added to the group. S_5 did not receive direct instruction but was needed so that the other 2 males could make the responses appropriate to Part 4.

[10] A correct response here was any of the following: "John"; "John Jones"; "He John"; "He John Jones"; "He is John."; or "He is John Jones."

Step 4 - If S_2 made no response or an incorrect response, *T* followed the procedures described in Step 4 of Part 1.

These procedures were followed until each *S* labeled two male *S*s in response to the cue "Who is he?" in three consecutive trials.

Part 5: Teaching Ss to label female classmates in response to "who" questions containing the 3rd person singular subject pronoun "she" (i.e., "Who is she?").[11]

Step 1 - 5 *S*s were seated in their chairs facing *T*. *T* looked at S_2 and said, "Show me standing." When S_2 was standing, *T* looked at S_1 and said, "S_1, who is she?", pointing in the direction of S_2. If S_1 responded correctly by saying S_2's name, *T* smiled, said, "Good," presented a consumable consequence, and recorded a correct response.[12] *T* then told S_2 to sit down and looked at S_4, etc.

Step 2 - If S_1 did not respond correctly, *T* said, "No," repeated the cue, "Who is she?", and modeled the correct response by saying, "She is S_2." *T* also pointed toward S_2 to emphasize the word "she." *T* then repeated the cue and continued Step 2 as described in Part 1.

Step 3 - If S_1 did not imitate *T*, *T* followed the procedures described in Step 3 of Part 1.

Step 4 - If S_1 made no response or an incorrect response, *T* followed the procedures described in Step 4 of Part 1.

These procedures were followed until each *S* labeled two different female *S*s in response to the cue "Who is she?" in three consecutive trials.

Part 6: Teaching Ss to label male and female classmates in response to "who" questions containing the 3rd person singular subject pronouns "he" and "she."[13]

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[11] Prior to instruction in Part 5, the extra male student was removed and an additional female student (S_6) was added to the group.

[12] A correct response here was any of the following: "Karen"; "Karen Miller"; "She Karen"; "She Karen Miller"; "She is Karen."; or "She is Karen Miller."

[13] Prior to instruction in Part 6, an additional male and female *S* (S_5 and S_6) were added to the group.

Step 1 - 6 *Ss* were seated in their chairs facing *T*. *T* looked at S_1 and said, "Show me standing." When S_1 was standing, *T* looked at S_2 and said, "S_2, who is he?", pointing in the direction of S_1. If S_2 responded correctly by saying S_1's name, *T* smiled, said, "Good," presented a consumable consequence to S_2, and recorded a correct response. *T* then told S_1 to sit down, looked at S_2, and said, "Show me standing," etc.

Step 2 - If S_2 did not respond correctly to the verbal cue, *T* said, "No," repeated the cue, "Who is he?", and modeled the correct response. *T* then repeated the cue. If S_2 responded correctly, *T* said, "Good," recorded "M_1" on the data sheet,and initiated Step 1 by looking at S_2 and saying, "Show me standing," etc.

Step 3 - If S_2 did not imitate *T*, *T* said, "No," repeated the cue, and followed the procedures described in Step 3 of Part 1.

Step 4 - If S_2 still did not respond correctly, *T* followed the procedures described in Step 4 of Part 1.

These procedures were followed until each *S* labeled two male and two female classmates in response to the cues "Who is he?" and "Who is she?" in three consecutive trials.

Part 7: *Teaching Ss to label themselves, the teacher,and male and female classmates in response to "who" questions containing the 1st, 2nd,and 3rd person singular subject pronouns (i.e., "Who am I?"; "Who are you?"; "Who is he/she?")*.[14]

Step 1 - 6 *Ss* were seated in their chairs facing *T*. *T* looked at S_1 and said, "Who am I?" If S_1 responded with *T*'s name, *T* smiled, said, "Good," presented a consumable consequence,and recorded a correct response. *T* then looked at S_2 and said, "Who are you?" The same consequences resulted if S_2 answered with his own name. *T* presented the 4 cues (i.e., "Who am I?"; "Who are you?"; "Who is he?"; and "Who is she?") to *Ss* in a random manner. It should be noted that instead of having male and female *Ss* stand, *T* pointed to a female *S* and asked, "Who is she?", or to a male *S* and asked, "Who is he?"

Step 2 - If S_1 did not respond correctly to any of the 4 cues *T* said, "No," repeated the cue, and modeled the correct response. *T* then repeated the cue and continued Step 2 as in Part 1. *T* then initiated Step 1 with S_2 using a different cue.

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[14] All 6 *Ss* used in Part 6 remained in the group for Part 7.

Step 3 - If S_1 did not imitate T, T followed the procedures described in Step 3 of Part I.

Step 4 - If S_1 did not respond correctly, T followed the procedures described in Step 4 of Part I.

These procedures were followed until each S labeled T, himself, and two male and female classmates in three consecutive trials in response to the following cues: "Who am I?"; "Who are you?"; "Who is he?"; and "Who is she?"

Phase VI: Teaching Ss to respond to "who-doing" questions with the 1st person singular subject pronoun and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing.").

In Phase VI, Ss were required to perform selected actions. T then asked Ss questions using "who" and verbs in the present progressive tense (e.g., "Who is standing?"). Ss were required to respond with the pronoun "I" and the correct present progressive verb (e.g., "I am standing."). Thus, in order to make the responses required in this phase, Ss had to select an appropriate pronoun, label the action they were performing in the present progressive tense, and combine those two responses to form a complete sentence.

Phase VI was designed to include a test of generalization to a new set of verbs. Ss learned to label six actions in Phase II. In Phase VI those actions were divided into 2 sets, with three actions in each set. First T obtained a baseline measure of each S's ability to respond to the "who-doing" questions in Sets I and II. Then Ss were taught to respond to the verbal cues in Set I. Next, T rebaselined the skills required in Sets I and II.

The design for Phase VI was as follows:

A. Baseline Sets I and II
B. Teach Set I
C. Rebaseline Sets I and II
D. Teach Set II if necessary
E. Rebaseline Sets I and II

Baseline procedures - Sets I and II

Baseline measures of the responses required in Phases VI, VII, and IX were obtained before Phases I-V. This procedure was used in an attempt to minimize the occurrence of incidental learning during the baselines of Phases I-V that might distort performance on the initial baselines of Phases VI, VII and IX. Also, the terminal behaviors for this program were found in the Phase VI-IX tasks, and any S who responded correctly to all of the cues in those phases would be removed from the instruction group.

The baseline measures for Phase VI were obtained as follows: *S*s and *T* were seated in their chairs facing the *Action Corner*. *T* looked at S_1 and said, "Sit in the *Action Corner*," while pointing to the appropriate place. When S_1 was seated in the chair in the *Action Corner*, *T* said, "Show me standing." If S_1 did not stand, *T* physically guided S_1 to a standing position.

While S_1 was standing, *T* said to S_1, "Who is standing?" If S_1 responded correctly by saying, "I am standing," *T* said, "Thank you," recorded a correct response, and presented a different cue to S_2, etc. It should be noted that the only responses recorded as correct were present progressive verbs preceded by "I am."

If S_1 said nothing, responded incorrectly, or gave an incomplete response, *T* said, "Thank you," recorded the response, and presented a different cue to S_2, etc.

If S_1 gave a response containing his own proper name, *T* attempted to obtain a pronoun response by saying, "Say it another way." *T* then said, "Thank you," recorded the response, and presented a different cue to S_2, etc. *S*s were given two opportunities to respond to each of the cues in Sets I and II (i.e., "Who is standing, waving, cutting, combing, reading, and zipping?").

Teaching procedures - Set I

The baseline procedures described above were used to determine each *S*'s ability to respond to the verbal cues in Phase VI. After two baseline trials of Sets I and II, *T* began teaching Set I using the following procedures:

Step 1 - *S*s and *T* were seated in their chairs facing the *Action Corner*. *T* looked at S_1 and said, "Sit in the *Action Corner*," while pointing to the appropriate place. When S_1 was seated in the chair in the *Action Corner*, *T* said, "Show me standing." When S_1 was standing, *T* looked at S_1 and said, "Who is standing?" If S_1 responded correctly by saying, "I am standing," *T* said, "Good," recorded a correct response, presented a consumable consequence, and instructed S_1 to return to the group and sit down. *T* then told S_2 to sit in the *Action Corner*, etc.

Step 2 - If S_1 responded incorrectly, *T* followed one of the following procedures:

a. If S_1 used his own proper name instead of "I", *T* recorded S_1's first response, said, "O.K., now say it another way," and repeated the cue, "Who is standing?" If S_1 responded correctly, *T* said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with S_2, etc.

b. If S_1 gave an incomplete response (e.g., "I"; "I standing"; "am standing"), *T* recorded S_1's first response and said, "O.K., now say the whole sentence." *T* then repeated the cue, "Who is standing?" If S_1 gave the correct response, *T* said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with S_2, etc.

c. If S_1 gave an incorrect response (e.g., "I am waving."), *T* recorded S_1's first response, said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say 'I am standing.'" *T* then repeated the cue. If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_2, etc.

Step 3 - If S_1 responded incorrectly in Step 2, *T* followed one of the following procedures:

a. If S_1 again used his own proper name instead of "I" (see Step 2a), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say it another way. Say 'I am standing.'" *T* then repeated the cue, "Who is standing?" If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_2, etc.

b. If S_1 again gave an incomplete response (see Step 2b), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say the whole sentence. Say 'I am standing.'" *T* then repeated the cue, "Who is standing?" If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_2, etc.

c. If S_1 did not correctly imitate *T*'s model (see Step 2c), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say the whole sentence. Say 'I am standing.'" *T* then repeated the cue, "Who is standing?" If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_2", and initiated Step 1 with S_2, etc.

Step 4 - If S_1 responded incorrectly in Step 3, *T* followed one of the following procedures:

a. If S_1 used his own proper name instead of "I", *T* followed the procedures used in Step 3a. If S_1 correctly imitated *T*'s second verbal model, *T* said, "Good," recorded "M_2", and initiated Step 1 with S_2, etc.

b. If S_1 gave an incomplete response, T followed the procedures used in Step 3b. If S_1 correctly imitated T's second verbal model, T said, "Good," recorded "M_2", and initiated Step 1 with S_2, etc.

c. If S_1 gave an incorrect response, T said, "No! I wanted you to say 'I am standing,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to Step 1 with S_2, etc.

Step 5 - If S_1 responded incorrectly in Step 4 (a or b), T said, "No! I wanted you to say 'I am standing,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to Step 1 with S_2, etc.

When necessary, T proceeded through Step 5 with S_1 before proceeding to Step 1 with S_2. However, it should be noted that a) Steps 2-5 were implemented only once before T proceeded to S_2 and b) on subsequent trials, instruction with S_1 began on Step 1. These procedures were followed until each S responded correctly to each of the three cues in Set I (i.e., "Who is standing, waving, and cutting?") under the conditions set forth in Step 1 in three consecutive trials. It should be noted that the verbal cues were presented randomly with the restriction that no cue was presented twice in succession.

Re-baseline Sets I and II

After each S responded correctly to each of the three cues in Set I in three consecutive trials, T reinstated Phase VI Baseline procedures. Baseline data was obtained for two trials on Sets I and II. This baseline was used to determine if the responses learned in Set I would generalize to the cues used in Set II.

Teaching procedures - Set II

T taught Set II using the procedures described in Part 1 until criterion was reached by each S.

Re-baseline Sets I and II

T again used Phase VI Baseline procedures and recorded each S's performance on two trials each of Sets I and II.

Phase VII: Teaching Ss to respond to "who-doing" questions with the 2nd person singular pronoun and present progressive verbs (e.g., Q: "Who is standing?" A: "You are standing.").

The objective of Phase VII was to teach Ss to answer questions with the pronoun "you." That is, T performed an action. S was then asked a "who-doing" question, and was required to respond with the pronoun "you" and the appropriate present progressive verb. In Phase VI Ss were taught to use the pronoun "I" as another way of talking about themselves. In Phase VII Ss were taught to use the pronoun "you" when referring to T, who was asking questions.

The design for Phase VII was as follows:

A. Baseline Sets I and II
B. Teach Set I
C. Rebaseline Sets I and II
D. Teach Set II if necessary
E. Rebaseline Sets I and II

Baseline procedures - Sets I and II

Baseline measures of the tasks in Phase VII were obtained after Phase VI baselines, but before Phases I-V.

The baseline measures for Phase VII were obtained as follows: Ss and T were seated in their chairs facing the Action Corner. T went to the Action Corner and performed an action (e.g., standing). While standing, T said to S_1, "S_1, who is standing?" If S_1 responded correctly by saying, "You are standing," T said, "Thank you," recorded a correct response, and presented a different cue to S_2, etc. It should be noted that the only responses recorded as correct were present progressive verbs preceded by "You are."

If S_1 said nothing, responded incorrectly, or gave an incomplete response, T said, "Thank you," recorded the response, and gave a different action and verbal cue to S_2, etc.

If S_1 gave a response containing T's proper name, T attempted to obtain a pronoun response by saying, "Say it another way." T then said, "Thank you," recorded the response, and presented a different action and verbal cue to S_2, etc. Ss were given two opportunities to respond to each of the cues in Sets I and II (i.e., "Who is standing, waving, cutting, combing, reading, and zipping?").

Teaching procedures - Set I

The baseline procedures described above were used to determine each S's ability to respond to the verbal cues in Phase VII. After two baseline trials of Sets I and II, T began teaching Set I using the following procedures:

Step I - Ss were seated in their chairs facing the Action Corner. T went to the Action Corner and stood facing the Ss. While standing, T said to S_1, "S_1, who is standing?" If S_1 responded correctly by saying, "You are standing," T said, "Good," recorded a correct response, presented a consumable consequence to S_1, and gave a different action and verbal cue to S_2, etc.

Step 2 - If S_1 responded incorrectly, *T* followed one of the following procedures:

a. If S_1 used *T*'s proper name instead of "you", *T* recorded S_1's first response, said, "O.K., now say it another way," and repeated the cue, "Who is standing?" If S_1 responded correctly, *T* said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with S_2, etc.

b. If S_1 gave an incomplete response (e.g., "You"; "You standing"; "are standing"), *T* recorded S_1's first response and said, "O.K., now say the whole sentence." *T* then repeated the cue, "Who is standing?" If S_1 then gave the correct response, *T* said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with S_2, etc.

c. If S_1 gave an incorrect response (e.g., "You are zipping."), *T* recorded S_1's first response, said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say 'You are standing.'" *T* then repeated the cue. If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_2, etc.

Step 3 - If S_1 responded incorrectly in Step 2, *T* followed one of the following procedures:

a. If S_1 again used *T*'s proper name instead of "you" (see Step 2a), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say it another way. Say 'You are standing.'" *T* then repeated the cue, "Who is standing?" If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_2, etc.

b. If S_1 again gave an incomplete response (see Step 2b), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say the whole sentence. Say 'You are standing.'" *T* then repeated the cue, "Who is standing?" If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_2, etc.

c. If S_1 did not correctly imitate *T*'s model (see Step 2c), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say the whole sentence. Say 'You are standing.'" *T* then repeated the cue, "Who is standing?" If S_1 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_2", and initiated Step 1 with S_2, etc.

Step 4 - If $\underline{S}_1$ responded incorrectly in Step 3, T followed one of the following procedures:

a. If $\underline{S}_1$ used T's proper name instead of "you", T followed the procedures used in Step 3a. If $\underline{S}_1$ correctly imitated T's second verbal model, T said, "Good," recorded "M_2", and initiated Step 1 with $\underline{S}_2$, etc.

b. If $\underline{S}_1$ gave an incomplete response, T followed the procedures used in Step 3b. If $\underline{S}_1$ correctly imitated T's second verbal model, T said, "Good," recorded "M_2", and initiated Step 1 with $\underline{S}_2$, etc.

c. If $\underline{S}_1$ gave an incorrect response, T said, "No! I wanted you to say 'You are standing,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to Step 1 with $\underline{S}_2$, etc.

Step 5 - If $\underline{S}_1$ responded incorrectly in Step 4 (a or b), T said, "No! I wanted you to say 'You are standing,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to Step 1 with $\underline{S}_2$, etc.

When necessary T proceeded through Step 5 with $\underline{S}_1$ before proceeding to Step 1 with $\underline{S}_2$. However, it should be noted that a) Steps 2-5 were implemented only once before T proceeded to $\underline{S}_2$ and b) on subsequent trials, instruction with $\underline{S}_1$ began on Step 1. These procedures were followed until each S responded correctly to each of the three cues in Set I (i.e., "Who is standing, waving, and cutting?") under the conditions set forth in Step 1 in three consecutive trials. It should be noted that the verbal cues were presented randomly with the restriction that no cue was presented twice in succession.

Rebaseline Sets I and II

After each S responded correctly to each of the three cues in Set I in three consecutive trials, T reinstated Phase VII Baseline procedures. Baseline data was obtained for two trials on Sets I and II. This baseline was used to determine if the responses learned in Set I would generalize to the cues used in Set II.

Teaching procedures - Set II

T taught Set II using the procedures described in Part I until criterion was reached by each S.

Rebaseline Sets I and II

T again used Phase VII Baseline procedures and recorded each S's performance on two trials each of Sets I and II.

Phase VIII: Teaching Ss to respond to "who-doing" questions with the 1st and 2nd person singular subject pronouns and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing." Q: "Who is standing?" A: "You are standing.").

In Phase VIII, T presented in an alternating fashion the "who-doing" questions used in Phases VI and VII. That is, either T or S performed an action. S was then asked a "who-doing" question and was required to respond with the appropriate pronoun (either "I" or "you") and the correct present progressive verb.

As stated previously, "I" and "you" appear more difficult to teach than "he" and "she", because the rules for using them cannot be stated simply and because their use depends on, and varies across, situations. For these reasons, it seemed important to include a phase where the pronouns "I" and "you" were clearly contrasted. By alternately having either T or S perform an action, particular attention was drawn to the differences in the "I" and "you" pronoun responses required.

The design for Phase VIII was as follows:

A. Baseline Sets I and II
B. Teach Set I
C. Rebaseline Sets I and II
D. Teach Set II if necessary
E. Rebaseline Sets I and II

Baseline procedures - Sets I and II

The baseline measures for Phase VIII were obtained at the start of this phase, not at the start of the program as they were for Phases VI, VII, and IX. The reason for this is that Phase VIII was added to the program when Group A completed Phase VII.

The baseline measures for Phase VIII were obtained as follows: Ss and T were seated in their chairs facing the Action Corner. T looked at S_1 and said, "Sit in the Action Corner," while pointing to the appropriate place. When S_1 was seated in the chair, T said, "Show me standing." If S_1 did not stand, T physically guided S_1 to a standing position.

While S_1 was standing, T said to S_1, "Who is standing?" T recorded S_1's response, said, "Thank you," and proceeded exactly as described in the baseline procedures for Phase VI. When S_1 had returned to his seat, T went to the Action Corner and performed an action (e.g., waving). While waving, T said to S_2, "S_2, who is waving?" T recorded S_2's response and proceeded exactly as described in the baseline procedures for Phase VII.

When T returned to her seat, she presented a different cue to S_3, etc. In an alternating fashion, T either performed an action herself or directed one of the Ss to do it. Ss were given two opportunities to respond to each of the cues in Sets I and II as performed by themselves and T (i.e., "Who is standing, waving, cutting, combing, reading, and zipping?"). It should be noted that each S was presented with only one verbal cue in a single turn.

Teaching procedures - Set I

The baseline procedures described above were used to determine each S's ability to respond to the verbal cues in Phase VIII. After two baseline trials of Sets I and II, T began teaching Set I using the following procedures:

Step 1 - Ss and T were seated in their chairs facing the Action Corner. T looked at S_1 and said, "Sit in the Action Corner. When S_1 was seated, T said, "Show me standing." When S_1 was standing, T looked at S_1 and said, "Who is standing?" If S_1 responded correctly by saying, "I am standing," T said, "Good," recorded a correct response, presented a consumable consequence, and instructed S_1 to return to the group and sit down. T then went to the Action Corner and gave a different action and verbal cue to S_2, etc.

Steps 2-5 - If S_1 responded incorrectly to an action he/she performed, T followed the procedures used in Steps 2-5 of Phase VI. If S_1 responded incorrectly to an action performed by T, T followed the procedures used in Steps 2-5 of Phase VII.

When necessary T proceeded through Step 5 with S_1 before proceeding to Step 1 with S_2. However, it should be noted that a) Steps 2-5 were implemented only once before T proceeded to S_2 and b) on subsequent trials, instruction with S_1 began on Step 1. These procedures were followed until each S responded correctly to each of the six action and verbal cues in Set I (i.e., "Who is standing, waving, and cutting?" with Ss performing the actions and "Who is standing, waving, and cutting?" with T performing the actions) in three consecutive trials.

Rebaseline Sets I and II

After each S responded correctly to each of the six action and verbal cues in Set I in three consecutive trials, T reinstated Phase VIII Baseline procedures. Baseline data was obtained for two trials on Set I and Set II. This baseline data was used to determine if the responses learned in Set I would generalize to the cues used in Set II.

Teaching procedures - Set II

T taught Set II using the procedures described for Set I until criterion was reached by each S.

Rebaseline Sets I and II

T again used Phase VIII Baseline procedures and recorded each S's performance on two trials each of Sets I and II.

Phase IX: Teaching Ss to respond to "who-doing" questions with 3rd person singular subject pronouns and present progressive verbs (e.g., Q: "Who is standing?" A: "He is standing." Q: "Who is standing?" A: "She is standing.").

The objective of Phase IX was to teach Ss to use the pronouns "he" and "she" correctly with present progressive verbs in answer to "who-doing" questions. This phase was divided into 3 parts. In Part 1 Ss were taught to respond to "who-doing" questions concerning a male classmate performing an action with the singular subject pronoun "he." In Part 2 Ss were taught to respond to the same "who-doing" questions asked about a female classmate with the singular subject pronoun "she." In Part 3 T presented in an alternating fashion the questions used in Parts 1 and 2. That is, either a male or female performed an action. Ss were then asked "who-doing" questions and were required to respond with the appropriate pronoun ("he" or "she") and the correct present progressive verbs. As in Phases VI-VIII, Ss were required to: a) select the appropriate pronoun, b) label the action being performed in the present progressive tense, and c) combine those two responses to form a sentence.

The design for Phase IX was as follows:

A. Baseline Part 3, Sets I and II
B. Teach Part 1, Set I
C. Teach Part 2, Set I
D. Rebaseline Part 3, Sets I and II
E. Teach Part 3, Set I
F. Rebaseline Part 3, Sets I and II
G. Teach Part 3, Set II if necessary
H. Rebaseline Part 3, Sets I and II

Baseline procedures - Part 3, Sets I and II

The baseline measures for Phase IX, Part 3, were obtained as follows:[15] Ss and T were seated in their chairs facing the Action Corner. T looked at S_1 and said, "S_1, sit in the

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[15] Baseline measures of Phase IX, Parts 1 and 2 were judged unnecessary.

Action Corner," while pointing to the appropriate place. When S_1 was seated in the chair in the Action Corner, T walked to S_1 and whispered, "Show me standing," into his ear. If S_1 did not respond correctly, T physically guided S_1 to a standing position. While S_1 was standing, T walked over to S_2 and said, "Who is standing?" If S_2 responded correctly by saying, "He/She is standing," T said, "Thank you," recorded a correct response, and presented a different cue to S_3. It should be noted that the only responses recorded as correct were present progressive verbs preceded by "He/She is."

If S_2 said nothing, responded incorrectly, or gave an incomplete response, T said, "Thank you," recorded the response, and presented a different cue to S_3, etc.

If S_2 gave a response containing S_1's proper name, T attempted to obtain a pronoun response by saying, "Say it another way." T then said, "Thank you," recorded S_2's second response, and presented a different cue to S_3, etc. All 4 Ss were given two opportunities to respond to each of the cues in Sets I and II as performed by 2 male and 2 female classmates (i.e., male/female standing, waving, cutting, combing, reading, and zipping).

Teaching procedures - Part 1

The baseline procedures described above were used to determine each S's ability to respond to the verbal cues in Phase IX, Part 3. After two baseline trials of Part 3, Sets I and II, T began teaching Part 1, Set I, using the following procedures:

Step 1 - Ss and T were seated in their chairs facing the Action Corner. T looked at S_1 and said, "S_1, sit in the Action Corner," while pointing to the appropriate place. When S_1 was seated in the chair in the Action Corner, T walked to S_1 and whispered, "Show me standing," into his ear. If S_1 did not respond correctly, T physically guided S_1 to a standing position. While S_1 was standing, T walked over to S_2 and said, "Who is standing?" If S_2 responded correctly by saying, "He is standing," T said, "Good," recorded a correct response, presented a consumable consequence, and instructed S_1 to return to the group and sit down. T then told S_3 to sit in the Action Corner, etc.[16]

Step 2 - If S_2 responded incorrectly, T followed one of the following procedures:

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[16] Males: S_1, S_3, S_5 Females: S_2, S_4, S_6

a. If S_2 used S_1's proper name instead of "he", *T* said "O.K., now say it another way," and repeated the cue, "Who is standing?" If S_2 responded correctly, *T* said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with S_3, etc.

b. If S_2 gave an incomplete response (e.g., "He"; "He is"; "He standing"), *T* said, "O.K., now say the whole sentence." *T* then repeated the cue, "Who is standing?" If S_2 then gave the correct response, *T* said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with S_3, etc.

c. If S_2 gave an incorrect response (e.g., "She is standing."), *T* said, "No! This is S_1. S_1 is a boy. What do we call a boy?" If S_2 responded correctly by saying, "He," *T* said, "Good," repeated the cue, "Who is standing?" and modeled the correct response, "Say 'He is standing.'" *T* then repeated the cue. If S_2 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_3, etc.

Step 3 - If S_2 responded incorrectly in Step 2, *T* followed one of the following procedures:

a. If S_2 again used S_1's proper name instead of "he" (see Step 2a), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say it another way. Say 'He is standing.'" *T* then repeated the cue, "Who is standing?" If S_2 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_3, etc.

b. If S_2 again gave an incomplete response (see Step 2b), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say the whole sentence. Say 'He is standing.'" *T* then repeated the cue, "Who is standing?" If S_2 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_1", and initiated Step 1 with S_3, etc.

c. If S_2 did not correctly imitate *T*'s model (see Step 2c), *T* said, "No," repeated the cue, "Who is standing?", and modeled the correct response, "Say the whole sentence. Say 'He is standing.'" *T* then repeated the cue, "Who is standing?" If S_2 correctly imitated *T*'s verbal model, *T* said, "Good," recorded "M_2", and initiated Step 1 with S_3, etc.

Step 4 - If S_2 responded incorrectly in Step 3, *T* followed one of the following procedures:

a. If $\underline{S}_2$ used $\underline{S}_1$'s proper name instead of "he", T followed the procedures used in Step 3a. If $\underline{S}_2$ correctly imitated T's second verbal model, T said, "Good," recorded "M_2", and initiated Step 1 with $\underline{S}_3$, etc.

b. If $\underline{S}_2$ gave an incomplete response, T followed the procedures used in Step 3b. If $\underline{S}_2$ correctly imitated T's second verbal model, T said, "Good," recorded "M_2", and initiated Step 1 with $\underline{S}_3$, etc.

c. If $\underline{S}_2$ gave an incorrect response or no response, T said, "No! I wanted you to say 'He is standing,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to Step 1 with $\underline{S}_3$, etc.

Step 5 - If $\underline{S}_2$ responded incorrectly in Step 4 (a or b), T said, "No! I wanted you to say 'He is standing,'" recorded an incorrect response, and terminated teaching for this trial. T then proceeded to Step 1 with $\underline{S}_3$, etc.

When necessary, T proceeded through Step 5 with $\underline{S}_2$ before proceeding to Step 1 with $\underline{S}_3$. However, it should be noted that a) Steps 2-5 were implemented only once before T proceeded to $\underline{S}_3$ and b) on subsequent trials, instruction with $\underline{S}_2$ began on Step 1. These procedures were followed until each S responded correctly to each of the three cues in Set I (i.e., "Who is standing, waving, and cutting?") under the conditions set forth in Step 1 in three consecutive trials. In each trial S was required to respond to questions asked about 2 males performing each of the three actions in Set I. It should be noted that the verbal cues were presented randomly with the restriction that no cue was presented twice in succession.

Teaching procedures - Part 2

When Ss reached criterion on Part 1, Set I, T initiated instruction on Part 2, Set I, using the following procedures:

Step 1 - The 6 Ss and T were seated in their chairs facing the Action Corner. T looked at $\underline{S}_2$ and said, "Sit in the Action Corner," while pointing to the appropriate place. When $\underline{S}_2$ was seated in the chair in the Action Corner, T walked to $\underline{S}_2$ and whispered, "Show me standing," into her ear. If $\underline{S}_2$ did not respond correctly, T physically guided $\underline{S}_2$ to a standing position. While $\underline{S}_2$ was standing, T walked over to $\underline{S}_1$ and said, "Who is standing?" If

$\underline{S}_1$ responded correctly by saying, "She is standing," $\underline{T}$ said, "Good," recorded a correct response, presented a consumable consequence, and instructed $\underline{S}_2$ to return to the group and sit down. $\underline{T}$ then told $\underline{S}_4$ to sit in the Action Corner, etc.[17]

Step 2 - If $\underline{S}_1$ responded incorrectly, $\underline{T}$ followed one of the following procedures:

a. If $\underline{S}_1$ used $\underline{S}_2$'s proper name instead of "she", $\underline{T}$ said, "O.K., now say it another way," and repeated the cue, "Who is standing?" If $\underline{S}_1$ responded correctly, $\underline{T}$ said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with $\underline{S}_3$, etc.

b. If $\underline{S}_1$ gave an incomplete response (e.g., "She"; "She is"; "She standing"), $\underline{T}$ said, "O.K., now say the whole sentence." $\underline{T}$ then repeated the cue, "Who is standing?" If $\underline{S}_1$ then gave the correct response, $\underline{T}$ said, "Good," recorded "+ C_2" (correct response - 2nd cue), and initiated Step 1 with $\underline{S}_3$, etc.

c. If $\underline{S}_1$ gave an incorrect response (e.g., "He is standing."), $\underline{T}$ said, "No! This is $\underline{S}_2$. $\underline{S}_2$ is a girl. What do we call a girl?" If $\underline{S}_1$ responded correctly by saying, "She," $\underline{T}$ said, "Good," repeated the cue, "Who is standing?", and modeled the correct response, "Say 'She is standing.'" $\underline{T}$ then repeated the cue. If $\underline{S}_1$ correctly imitated $\underline{T}$'s verbal model, $\underline{T}$ said, "Good," recorded "M_1", and initiated Step 1 with $\underline{S}_3$, etc.

Step 3 - If $\underline{S}_1$ responded incorrectly in Step 2, $\underline{T}$ followed one of the procedures described in Part 1, Step 3, except that the correct response was "She is standing" instead of "He is standing."

Step 4 - If $\underline{S}_1$ responded incorrectly in Step 3, $\underline{T}$ followed one of the procedures described in Part 1, Step 4, except that the correct response was "She is standing."

Step 5 - If $\underline{S}_1$ responded incorrectly in Step 4 (a or b), $\underline{T}$ said, "No! I wanted you to say 'She is standing,'" recorded an incorrect response, and terminated teaching for this trial. $\underline{T}$ then proceeded to Step 1 with $\underline{S}_3$, etc.

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[17] Males: $\underline{S}_1$, $\underline{S}_3$, $\underline{S}_5$ Females: $\underline{S}_2$, $\underline{S}_4$, $\underline{S}_6$

When necessary, *T* proceeded through Step 5 with S_1 before proceeding to Step 1 with S_3. However, it should be noted that a) Steps 3-5 were implemented only once before *T* proceeded to S_3 and b) on subsequent trials, instruction with S_1 began on Step 1. These procedures were followed until each *S* responded correctly to each of the three cues in Set I (i.e., "Who is standing, waving, and cutting?") under the conditions set forth in Step 1 in three consecutive trials. In each trial, *S* was required to respond to questions asked about 2 females performing each of the three actions in Set I. It should be noted that the verbal cues were presented randomly with the restriction that no cue was presented twice in succession.

Rebaseline Part 3, Sets I and II

After each *S* responded correctly to each of the three cues in Set I of Parts 1 and 2 in three consecutive trials, *T* reinstated Phase IX, Part 3 *Baseline procedures*. Baseline data was obtained for two trials on Set I and Set II. This baseline was used to determine if the responses learned in Set I of Parts 1 and 2 would generalize to the cues used in Part 3, Sets I and II. It also showed if *S*s could respond correctly with either "he" or "she" in a sentence when a male or female alternately performed an action, after being taught to use "he" and "she" in separate situations.

Teaching procedures - Part 3

If baseline measures suggested that *S*s could not perform the tasks in Phase IX, Part 3, the following procedures were implemented:

Step 1 - The 6 *S*s and *T* were seated in their chairs facing the *Action Corner*. *T* looked at S_1 and said, "Sit in the *Action Corner*," while pointing to the appropriate place. When S_1 was seated in the chair in the *Action Corner*, *T* walked to S_1 and whispered, "Show me standing," into his ear. If S_1 did not respond correctly, *T* physically guided S_1 to a standing position. While S_1 was standing, *T* walked over to S_2 and said, "Who is standing?" If S_2 responded correctly by saying, "He is standing," *T* said, "Good," recorded a correct response, presented a consumable consequence, and instructed S_1 to return to the group and sit down. *T* then told S_2 to sit in the chair in the *Action Corner* and presented a different action and verbal cue to S_3, etc.[18]

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[18] Males: S_1, S_3, S_5 Females: S_2, S_4, S_6

Steps 2-5 - If $\underline{S}_2$ responded incorrectly to an action $\underline{S}_1$ (a male) performed, T followed the procedures used in teaching Steps 2-5 of Phase IX, Part 1. If $\underline{S}_2$ responded incorrectly to an action $\underline{S}_4$ (a female) performed, T followed the procedures used in teaching Steps 2-5 of Phase IX, Part 2.

When necessary, T proceeded through Step 5 with $\underline{S}_2$ before proceeding to Step 1 with $\underline{S}_3$. However, it should be noted that a) Steps 2-5 were implemented only once before T proceeded to $\underline{S}_3$ and b) on subsequent trials, instruction with $\underline{S}_2$ began on Step 1. These procedures were followed until each S responded correctly to each of the three cues in Set I (i.e., "Who is standing, waving, and cutting?") under the conditions set forth in Step 1 in three consecutive trials. In each trial, S was required to respond to questions asked about 2 males and 2 females performing each of the three actions in Set I. It should be noted that the verbal cues were presented randomly with the constraints that no cue was presented twice in succession and each S was asked only one question in a single turn.

Rebaseline Part 3, Sets I and II

After each S responded correctly to each of the three cues in Part 3, Set I, in three consecutive trials, T reinstated Phase IX, Part 3 Baseline procedures. Baseline data was obtained for two trials on Sets I and II. This baseline was used to determine if the responses learned in Part 3, Set I, would generalize to the cues used in Part 3, Set II.

Teaching procedures - Part 3, Set II

T taught Set II using the procedures described for Set I until criterion was reached by each S.

Rebaseline Part 3, Sets I and II

T again used Phase IX, Part 3 Baseline procedures and recorded performance on two trials each of Sets I and II.

Phase X: Teaching Ss to respond to "who-doing" questions with 1st, 2nd, and 3rd person singular subject pronouns and present progressive verbs (e.g., Q: "Who is standing?" A: "I am standing." Q: "Who is standing?" A: "You are standing." Q: "Who is standing?" A: "He/She is standing.").

The responses "I am," "You are," and "He/She is" were taught separately in Phases VI, VII and IX. For this reason, Phase X was included to determine if the Ss could respond with appropriate pronoun responses when the action and verbal cues used in Phases VI-IX were randomly presented. That is, either T, S, or a male or female classmate performed an action. S was then asked a "who-doing" question and was required to respond with the appropriate pronoun and the correct present progressive verb.

The tasks in Phase X required *Ss* to make the most complex discriminations of the entire program. That is, in order to select the correct pronoun, *Ss* had to choose from "I," "you," "he," or "she."

A few minor changes were made in the procedures used for this phase as compared with Phases VI-IX. First, instead of asking *Ss* only one question in a single turn, each *S* was asked 4 questions. For example, in one turn an *S* was required to answer "I am standing."; "You are waving."; "He is cutting."; and "She is reading." in response to appropriate action and verbal cues.

The design for Phase X was as follows:

A. Baseline Sets I and II
B. Teach Set I
C. Rebaseline Sets I and II
D. Teach Set II, if necessary
E. Rebaseline Sets I and II

Baseline procedures - Sets I and II

Ss and *T* were seated in their chairs facing the *Action Corner*. *T* looked at S_1 and said, "Sit in the *Action Corner*." When S_1 was seated in the chair in the *Action Corner*, *T* walked to S_1 and whispered, "Show me standing," into his ear. If S_1 did not respond correctly, *T* physically guided S_1 to a standing position. While S_1 was standing, *T* said to S_1, "Who is standing?" If S_1 responded correctly by saying, "I am standing," *T* said, "Thank you," recorded a correct response, and presented a different action and verbal cue to S_1. It should be noted that the only responses recorded as correct were present progressive verbs preceded by "I am," "You are," or "He/She is." If S_1 said nothing, responded incorrectly, or gave an incomplete response, *T* said, "Thank you," recorded the response, and presented a different cue to S_1, etc. If S_1 gave a response containing his own proper name, *T* attempted to obtain a pronoun response by saying, "Say it another way." *T* then said, "Thank you," recorded the response, and presented a different cue to S_1. Each *S* was given two opportunities to respond to each of the cues in Sets I and II as performed by themselves, *T*,and a male and a female classmate (i.e., "Who is standing, waving, cutting, combing, reading, and zipping?").

Teaching procedures - Set I

The baseline procedures described above were used to determine each *S*'s ability to respond to the verbal cues in Phase X. After two baseline trials of Sets I and II, *T* began teaching Set I using the following procedures:

Step 1 - *S*s and *T* were seated in their chairs facing the *Action Corner*. *T* looked at S_1 and said, "Sit in the *Action Corner*," while pointing to the appropriate place. When S_1 was seated in the chair in the *Action Corner*, *T* said, "Show me standing." When S_1 was standing, *T* looked at S_1 and said, "Who is standing?" If S_1 responded correctly by saying, "I am standing," *T* said, "Good," recorded a correct response, and presented a consumable consequence to S_1. *T* then went to the *Action Corner* and gave a different action and verbal cue to S_1 (e.g., "Who is waving?"), etc. *T* presented S_1 with four different action and verbal cues before proceeding to S_2.

Steps 2-5 - If S_1 responded incorrectly, *T* followed one of the following procedures:

a. If S_1 responded incorrectly to an action he performed, *T* followed the procedures used in Steps 2-5 of Phase VI.

b. If S_1 responded incorrectly to an action performed by *T*, *T* followed the procedures used in Steps 2-5 of Phase VII.

c. If S_1 responded incorrectly to an action S_3 (a male) performed, *T* followed the procedures used in Steps 2-5 of Phase IX, Part 1.

d. If S_1 responded incorrectly to an action S_2 (a female) performed, *T* followed the procedures used in Steps 2-5 of Phase IX, Part 2.

When necessary, *T* proceeded through Step 5 before presenting a different action and verbal cue to S_1. However,it should be noted that a) Steps 2-5 were implemented only once before *T* presented a different cue to S_1 and b) on subsequent trials, instruction with S_1 began on Step 1. These procedures were followed until each *S* responded correctly to each of the three cues in Set I (i.e., "Who is standing, waving, and cutting?") under the conditions set forth in Step 1 in three consecutive trials. In each trial, *S* was required to respond to questions asked about himself, *T*, a male classmate,and a female classmate performing each of the three actions in Set I.

Rebaseline Sets I and II

After each *S* responded correctly to each of the twelve action cues and the three verbal cues in Set I in three consecutive trials, *T* reinstated Phase X *Baseline procedures*. Baseline data was obtained for two trials on Sets I and II. This baseline was used to determine if the responses learned in Set I would generalize to the action and verbal cues used in Set II.

Teaching procedures - Set II

T taught Set II using the procedures described for Set I until criterion was reached by each *S*.

Rebaseline Sets I and II

T again reinstated Phase X *Baseline procedures* and recorded each *S*'s performance on two trials of Sets I and II.

Results

Group A

*S*s 1, 2, 3, and 4 (Group A) advanced through the program by attaining a defined criterion performance on each part of each phase. It should be noted that actually two different criterion levels were established. During baseline trials, criterion performance was defined as two consecutive errorless trials on any part of any phase. During teaching trials, criterion performance was defined as three consecutive errorless trials on any part of any phase.[19]

Baseline measures

Prior to instruction on the tasks required in Phases I-X, baseline measures of each *S*'s ability to perform the tasks required in Phases VI, VII, and IX were obtained. In Phase VI each *S* could make from 0 to 3 correct responses to the cues in Sets I and II. In the two baseline trials of Phase VI, *S*s 1, 2, 3, and 4 averaged 2.5, 0, 0, and 0 correct responses to the cues in Set I and 2, 0, 0, and 0 correct responses in Set II respectively. In the baseline trials of Phase VII, each *S* could make from 0 to 3 correct responses in Sets I and II. *S*s 1, 2, 3, and 4 averaged 0 correct responses in Sets I and II respectively. In Phase IX, Part 3, each *S* could make from 0 to 12 correct responses to the cues in Sets I and II. *S*s 1, 2, 3, and 4 averaged 0 correct responses to the cues in Sets I and II respectively.

As can be discerned from the baseline performance, except for $\underline{S}_1$ who averaged 2.5 and 2.0 correct responses in Phase VI, *S*s made no correct responses during the baseline trials of Phases VI, VII, and IX. In other words, *S*s did not answer the "who-doing" questions correctly with "I," "you," "he," or "she" and correct present progressive verbs.

Table I depicts the number of teaching trials each *S* required to attain criterion performance in Phases I through X. It should be noted that *S*s performed at criterion on selected parts during baseline trials, making instruction on those parts unnecessary.

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[19] A graphic depiction of the performance of each *S* in each phase is available but will not be presented here. The reader interested in a graphic presentation of the performance of *S*s can write the author at the Department of Specialized Educational Services, Madison Public Schools, 545 W. Dayton Street, Madison, Wisconsin, 53704.

Phase I

It can be discerned from Table I that during the baseline trials of Parts 1, 2, and 3, it was verified that Group A could imitate the required one, two, and three word verbal responses. Since no incorrect responses were made, teaching trials were unnecessary.

Phase II

Group A made no incorrect responses in the baseline trials of Parts 1, 2, and 3. Thus, it was verified that Ss could perform the selected actions in response to verbal cues in Part 1, visually discriminate those actions in Part 2, and label those actions using the present progressive verb form in Part 3. Since Ss responded correctly to the cues used in Parts 1, 2, and 3 in two consecutive trials, instruction was unnecessary.

Phase III

During the two baseline trials of Parts 1, 2, 3, and 4, Group A again responded correctly to the cues in all 4 parts. Thus, it was verified that Ss could visually discriminate by touching: themselves in Part 1; T in Part 2; their classmates in Part 3; and all of the above in Part 4 in response to name cues. Since no incorrect responses were made in the baseline trials, instruction was unnecessary.

Phase IV

In the baseline trials of Parts 1, 2, and 3, no S manifested criterion performance. In Parts 1 and 2, each S could make from 0 to 2 correct responses. Ss 1, 2, 3, and 4 all averaged .5 correct responses to the cues in Part 1 and 0 correct responses to the cues in Part 2. In Part 3 each S could make from 0 to 4 correct responses. Ss 1, 2, 3, and 4 averaged 0 correct responses to the cues in Part 3.

In Part 1 S_1 and S_3 were taught to "Touch a he" and attained criterion performance after only 3 teaching trials. These 2 Ss made no incorrect responses after the baseline trials. It appeared that observing T teach the correct response to another S was sufficient to induce correct responding when the cue "Touch a he" was presented. S_2 and S_4 required more teaching trials in order to reach criterion performance (4 and 5 trials respectively).

In Part 2 Ss were taught to visually discriminate a female classmate in response to the cue "Touch a she." As can be discerned from Table I, criterion performance was attained after 3 teaching trials. It appeared that acquiring the skills necessary to touch a "he" facilitated the performance of the skills necessary to touch a "she."

In Part 3 the cues "Touch a he" and "Touch a she" were alternately presented. S_1, S_2, and S_3 responded correctly to the cues when they were alternated. However, 6 teaching trials were necessary to teach S_4 to visually discriminate male and female classmates when the cues "Touch a he" and "Touch a she" were presented in an alternating manner.

Phase V

Group A made no incorrect responses in the baseline trials of Parts 1 through 7. Thus, it was verified that Ss could make proper name responses to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns. Since Ss responded correctly to the cues used in Parts 1 through 7 in two consecutive baseline trials, instruction was unnecessary.

Phase VI

Baseline measures of Phases VI, VII, and IX were obtained at the start of the program. As noted earlier, S_2, S_3, and S_4 made no correct responses in the baseline trials of Phase VI, Sets I and II. S_1, however, averaged 2.5 of a possible 3 correct responses in Set I and 2.0 of a possible 3 correct responses in Set II.

S_1, S_2, S_3, and S_4 received instruction regarding responding to "who-doing" questions with the 1st person singular subject pronoun and the present progressive verbs in Set I. It can be discerned from Table I that criterion performance was reached after 4, 6, 4, and 5 teaching trials respectively.

After Ss reached criterion on Set I, baseline measures of Sets I and II were again obtained. Ss maintained correct responding to Set I and made a remarkable 3 of 3 correct responses to the questions in Set II. In other words, all 4 Ss attained criterion performance on Set II without direct instruction.

Because of correct responding on Set II, instruction was unnecessary. The factors that account for improved performance on Set II without teaching cannot be determined. However, it appears that Ss acquired skills related to generalizing responses to "who-doing" questions using the 1st person singular subject pronoun across different actions.

It should be noted that none of the Ss in Group A responded with incomplete sentences to the questions asked in Phases VI-X. Errors occurred only in Ss using proper names instead of pronouns, selecting the wrong pronouns, or labeling the actions incorrectly. It appeared that requiring Ss to imitate three word verbal responses in Phase I facilitated the production of those responses in Phases VI-X.

Phase VII

In baseline trials of Phase VII, S_1, S_2, S_3, and S_4 made 0 of a possible 3 correct responses to the questions in Sets I and II respectively.

S_1, S_2, S_3, and S_4 received instruction regarding responding to "who-doing" questions with the 2nd person singular subject pronoun and the present progressive verbs in Set I. Teaching was unnecessary for S_1 (except for consequation) in that S_1 reached criterion on Set I after 3 teaching trials. As can be discerned from Table I, S_2, S_3, and S_4 reached criterion after 7, 4, and 4 teaching trials respectively.

After Ss reached criterion on Set I, baseline measures of Sets I and II were again obtained. Ss maintained correct responding to Set I and made 3 of 3 correct responses to the questions in Set II. As in Phase VI, Ss reached criterion on Set II without direct instruction.

Phase VIII

The baseline measures of Phase VIII were obtained after Ss reached criterion on Sets I and II in Phase VII. It can be discerned from Table I that during the baseline trials of Sets I and II, S_1, S_3, and S_4 made no incorrect responses. Thus, it was verified that 3 Ss could respond correctly to "who-doing" questions with the 1st and 2nd person singular subject pronouns "I" and "you" and present progressive verbs. S_2, however, averaged 4.0 of a possible 6 correct responses in Set I and 3.5 of a possible 6 correct responses in Set II respectively.

Instruction on Set I was initiated with S_2 and 5 teaching trials were required before S_2 reached criterion.

In rebaseline trials, S_2 averaged 6 out of 6 correct responses to the questions in Sets I and II. In other words, it was necessary to teach S_2 to respond appropriately only to the questions in Set I.

Phase IX

Baseline measures of Phase IX, Part 3, were obtained at the start of the program. As noted earlier, Ss made no correct responses in the baseline trials of Part 3, Sets I and II. It was deemed unnecessary to baseline Parts 1 and 2 since the responses required in Parts 1 and 2 were required in Part 3.

In Part 1, Set I, S_1, S_2, S_3, and S_4 were taught to respond to "who-doing" questions with the 3rd person singular subject pronoun "he" and present progressive verbs. Each S attained criterion performance after 4 teaching trials.

After Ss reached criterion on Part 1, Set I, instruction began on Part 2, Set I. In Part 2 Ss were taught to respond to "who-doing" questions with the 3rd person singular subject pronoun "she" and present progressive verbs. Only 3 teaching trials were required before S_1, S_2, and S_3 reached criterion performance. S_4 achieved criterion after 5 teaching trials.

After Ss reached criterion on Set I of Parts 1 and 2, baseline measures of Part 3, Sets I and II, were obtained. The number of correct responses increased from 0 of a possible 12 for each S in trials 1 and 2 to 12 of 12 in Sets I and II for S_1, S_2, and S_3. Thus, it was verified that S_1, S_2, and S_3 could respond correctly to "who-doing" questions with the 3rd person singular subject pronouns "he" and "she" and present progressive verbs. S_4, however, averaged 7.5 of a possible 12 correct responses in Set I and 5.5 of a possible 12 correct responses in Set II. Instruction was initiated with S_4 and a total of 4 teaching trials were required before S_4 achieved criterion on Set I.

In the final rebaseline trials, criterion responding was maintained by $\underline{S}_4$ in response to the questions in both Sets I and II of Part 3. In other words, $\underline{S}_4$ reached criterion on Set II without direct instruction.

Phase X

Phase X combined all of the skills required in Phases I-IX. Baseline measures of Phase X were not obtained until Ss reached criterion in Phase IX, Part 3. As can be discerned from Table I, Ss responded correctly to all 12 action and verbal cues in Sets I and II respectively.

Thus, it was established that Group A could respond to selected "who-doing" questions with the 1st, 2nd, and 3rd person singular subject pronouns "I," "you," "he," and "she" and present progressive verbs.

Group B

Ss 5, 6, 7, and 8 (Group B) advanced through the program by attaining a defined criterion performance on each part of each phase. As with Group A, two different criterion levels were established. During baseline trials, criterion performance was defined as two consecutive errorless trials on any part of any phase. During teaching trials, criterion performance was defined as three consecutive errorless trials on any part of any phase.

Baseline measures

Prior to instruction on the tasks required in Phases I-X, baseline measures of each S's ability to perform the tasks required in Phases VI, VII, and IX were obtained. Neither $\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$, nor $\underline{S}_8$ made a correct response during the initial baseline trials of Phases VI, VII, and IX. In other words, Ss did not answer the "who-doing" questions correctly with "I," "you," "he," or "she" and correct present progressive verbs.

Table II depicts the number of teaching trials each S required to attain criterion performance in Phases I through X. It should be noted that Ss performed at criterion on selected parts during baseline trials, making instruction on those parts unnecessary.

Phase I

It can be discerned from Table II that during the baseline trials of Parts 1, 2, and 3, it was verified that Group B could imitate the required one and two word verbal responses. Since Ss responded correctly to the cues used in Parts 1 and 2, instruction was unnecessary. In the baseline trials of Part 3, each S could make from 0 to 6 correct responses to the cues in Sets I-IV. Ss 5, 6, 7, and 8 averaged 6, 6, 5.5, and 3.0 correct responses in Set I; 4.5, 6, 3.0, and 3.0 correct responses in Set II; 2.5, 5.5, 4.5, and 2.0 correct responses in Set III; and 4.0, 6, 3.5, and 1.5 correct responses in Set IV respectively. As can be discerned from the baseline measures, the teaching of Sets I, II, and IV in Part 3 was unnecessary for $\underline{S}_6$.

$\underline{S}_5$, $\underline{S}_7$, and $\underline{S}_8$ were taught to imitate the 6 three word verbal responses containing the pronoun "I" in Part 3, Set I. $\underline{S}_5$ attained criterion performance after 6 teaching trials, while $\underline{S}_7$ and $\underline{S}_8$ required 8 teaching trials.

$\underline{S}_5$, $\underline{S}_7$, and $\underline{S}_8$ achieved criterion imitating the 6 three word verbal responses containing the pronoun "you" in Part 3, Set II, after 7, 9, and 6 teaching trials respectively.

$\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ were taught to imitate the 6 three word verbal responses containing the pronoun "he" in Part 3, Set III. Criterion performance was attained after 5, 4, 5, and 5 teaching trials respectively.

$\underline{S}_5$, $\underline{S}_7$, and $\underline{S}_8$ were taught to imitate the 6 three word verbal responses containing the pronoun "she" in Part 3, Set IV. Criterion performance was attained after 6, 5, and 5 teaching trials respectively.

After Ss completed instruction on Part 3, Set IV, baseline measures were again obtained of Ss' responses to the cues in Sets I-IV on two occasions. Group B maintained criterion responding to the cues in all 4 sets.

Phase II

As can be discerned from Table 11, Group B made no incorrect responses in the baseline trials of Parts 1 and 2. Thus, it was verified that Ss could perform the selected actions in response to verbal cues in Part 1 and visually discriminate those actions in Part 2. However, $\underline{S}_6$ was the only S who responded correctly to the cues in Part 3 in two baseline trials. $\underline{S}_5$, $\underline{S}_7$, and $\underline{S}_8$ averaged 5.5, 5.5, and .5 of a possible 6 correct responses respectively.

$\underline{S}_5$, $\underline{S}_7$, and $\underline{S}_8$ were taught to label 6 actions using the present progressive verb form. Criterion performance was attained after 3, 3, and 4 teaching trials respectively.

Phase III

During the two baseline trials of Parts 1, 2, 3, and 4, Group B responded correctly to the cues in all 4 parts. Thus, it was verified that Ss could visually discriminate by touching: themselves in Part 1; T in Part 2; their classmates in Part 3; and all of the above in Part 4 in response to name cues. Since no incorrect responses were made in the baseline trials, instruction was unnecessary.

Phase IV

In the baseline trials of Parts 1, 2, and 3, no S manifested criterion performance. In Parts 1 and 2, each S could make from 0 to 2 correct responses. Ss 5, 6, 7, and 8 averaged 1.0, 1.5, 1.0, and 0 correct responses in Part 1 and 0, .5, .5, and 1.5 correct responses in Part 2 respectively. In Part 3 each S could make from 0 to 4 correct responses. Ss 5, 6, 7, and 8 averaged 2.0, 1.0, 1.5, and 1.5 correct responses respectively to the cues in Part 3.

In Part 1 $\underline{S}_6$ was taught to "Touch a he" and attained criterion performance after only 3 teaching trials. $\underline{S}_6$ made no incorrect responses after the baseline trials. It appeared that observing $\underline{T}$ teach the correct response to another $\underline{S}$ was sufficient to induce correct responding when the cue "Touch a he" was presented. $\underline{S}_5$, $\underline{S}_7$, and $\underline{S}_8$ required more teaching trials in order to reach criterion performance (4, 5, and 4 trials respectively).

In Part 2 $\underline{S}$s were taught to visually discriminate a female classmate in response to the cue "Touch a she." As can be discerned from Table II, $\underline{S}_5$ and $\underline{S}_8$ reached criterion performance after 3 teaching trials. For these $\underline{S}$s, it appeared that acquiring the skills necessary to touch a "he" facilitated the performance of the skills necessary to touch a "she." $\underline{S}_6$ and $\underline{S}_7$ required more teaching trials in order to reach criterion performance (5 and 8 trials respectively).

In Part 3 the cues "Touch a he" and "Touch a she" were alternately presented. $\underline{S}_5$ and $\underline{S}_6$ responded correctly to the cues when they were alternated. However, 5 and 4 teaching trials respectively were necessary to teach $\underline{S}_7$ and $\underline{S}_8$ to visually discriminate male and female classmates when the cues "Touch a he" and "Touch a she" were presented in an alternating manner.

Phase V

Group B made no incorrect responses in the baseline trials of Parts 1 through 7. Thus, it was verified that $\underline{S}$s could make proper name responses to "who" questions containing 1st, 2nd, and 3rd person singular subject pronouns. Since $\underline{S}$s responded correctly to the cues used in Parts 1 through 7 in two consecutive baseline trials, instruction was unnecessary.

Phase VI

Baseline measures of Phases VI, VII, and IX were obtained at the start of the program. As noted earlier, Group B made no correct responses in the baseline trials of Phase VI, Sets I and II.

$\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ received instruction regarding responding to "who-doing" questions with the 1st person singular subject pronoun and the present progressive verbs in Set I. It can be discerned from Table II that criterion performance was reached after 5, 5, 6, and 5 teaching trials respectively.

After $\underline{S}$s reached criterion on Set I, baseline measures of Sets I and II were again obtained. $\underline{S}$s maintained correct responding to Set I and made a remarkable 3 of 3 correct responses to the questions in Set II. In other words, all 4 $\underline{S}$s attained criterion performance on Set II without direct instruction.

Because of correct responding on Set II, instruction was unnecessary. The factors that account for improved performance on Set II without teaching cannot be determined. However, it appears that like Group A, Group B acquired skills related to generalizing responses to "who-doing" questions using the 1st person singular subject pronoun across different actions.

It should be noted that Group B responded with only complete sentences to the questions asked in Phases VI-X. It appears that requiring Ss to imitate three word verbal responses in Phase I facilitated the production of those responses in Phases VI-X.

Phase VII

In baseline trials of Phase VII, $\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ made 0 of a possible 3 correct responses to the questions in Sets I and II respectively. $\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ received instruction regarding responding to "who-doing" questions with the 2nd person singular pronoun and the present progressive verbs in Set I. As can be discerned from Table II, $\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ reached criterion after 4, 6, 6, and 4 teaching trials respectively.

After Ss reached criterion on Set I, baseline measures of Sets I and II were again obtained. Ss maintained correct responding to Set I and made 3 of 3 correct responses to the questions in Set II. As in Phase VI, Ss reached criterion on Set II without direct instruction.

Phase VIII

The baseline measures of Phase VIII were obtained after Ss reached criterion on Sets I and II in Phase VII. It can be discerned from Table II that during the baseline trials of Sets I and II, $\underline{S}_5$ made no incorrect responses. Thus, it was verified that $\underline{S}_5$ could respond correctly to "who-doing" questions with the 1st and 2nd person singular subject pronouns "I" and "you" and present progressive verbs. $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$, however, averaged 5.5, 3.0, and 3.0 of a possible 6 correct responses in Set I and 4.5, 5.5, and 3.0 of a possible 6 correct responses in Set II respectively.

Instruction on Set I was initiated with $\underline{S}_6$ and 4 teaching trials were required before $\underline{S}_6$ reached criterion. $\underline{S}_7$ and $\underline{S}_8$ reached criterion performance after 5 and 7 trials respectively.

In rebaseline trials, $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ averaged 6 out of 6 correct responses to the questions in Sets I and II. In other words, it was necessary to teach $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ to respond appropriately only to the questions in Set I.

Phase IX

Baseline measures of Phase IX, Part 3, were obtained at the start of the program. As noted earlier, Ss made no correct responses in the baseline trials of Part 3, Sets I and II. It was deemed unnecessary to baseline Parts 1 and 2 since the responses required in Parts 1 and 2 were required in Part 3.

In Part 1, Set I, $\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$, and $\underline{S}_8$ were taught to respond to "who-doing" questions with the 3rd person singular subject pronoun "he" and present progressive verbs. Each S attained criterion performance after 4 teaching trials.

After Ss reached criterion on Part 1, Set I, instruction began on Part 2, Set I. In Part 2 Ss were taught to respond to "who-doing" questions with the 3rd person singular subject pronoun "she" and present progressive verbs. Only 3 teaching trials were required before S_6 reached criterion performance. S_5, S_7, and S_8 achieved criterion after 4, 4, and 5 teaching trials respectively.

After Ss reached criterion on Set I of Parts 1 and 2, baseline measures of Part 3, Sets I and II were obtained. The number of correct responses increased from 0 of a possible 12 for each S in trials 1 and 2 to 12 of 12 in Sets I and II for S_5, S_6, and S_7. Thus, it was verified that S_5, S_6, and S_7 could respond correctly to "who-doing" questions with the 3rd person singular subject pronouns "he" and "she" and present progressive verbs. S_8, however, averaged 6 of a possible 12 correct responses in Sets I and II. S_8 responded to all the cues in Part 3 with the pronoun "she", whether a male or female classmate had performed the action. In this and other instances when responses taught separately were combined, S_8 tended to respond with the most recently learned responses. In this case, those were the responses containing the pronoun "she" and present progressive verbs. Instruction was initiated with S_8 and a total of 4 teaching trials were required before S_8 achieved criterion on Set I.

In the final rebaseline trials, criterion responding was maintained by S_8 in response to the questions in both Sets I and II of Part 3. In other words, S_8 reached criterion on Set II without direct instruction.

Phase X

Phase X combined all of the skills required in Phases I-IX. Baseline measures of Phase X were not obtained until Ss reached criterion in Phase IX, Part 3. As can be discerned from Table II, S_5 responded correctly to all 12 action and verbal cues in Sets I and II respectively. S_6, S_7, and S_8, however, averaged only 8.5, 6, and 6 correct responses in Set I and 8, 6, and 6 correct responses in Set II respectively. As in Phase IX, Ss seemed to be responding with the most recently learned responses ("he" and "she").

S_6, S_7, and S_8 were taught to respond to "who-doing" questions with 1st, 2nd, and 3rd person singular subject pronouns and the present progressive verbs in Set I. Criterion performance was reached after 3, 6, and 4 teaching trials respectively.

When Group B reached criterion on Set I, baseline measures of Sets I and II were again obtained. Ss maintained correct responding to Set I and made 12 of a possible 12 correct responses to the questions in Set II.

Thus, it was established that Group B could respond to selected "who-doing" questions with the 1st, 2nd, and 3rd person singular subject pronouns "I," "you," "he," and "she" and present progressive verbs.

Discussion

The performance of the students in Groups A and B as reported above strongly suggests that the two major objectives of the program were realized in that: (a) the students responded correctly to the "who" questions presented; and (b) they used semantically and syntactically acceptable first, second, and third person singular pronoun responses.

While the skills acquired certainly do not solve all the developmental communication problems of the students, they do provide them access to communication vehicles heretofore unavailable. That is, they now have a reasonable probability of understanding pronouns presented in reading material and have a higher probability of social acceptance in that their speech patterns are more similar to their non-handicapped age peers.

In addition to the empirical data presented above, there were other notable changes in the communication repertoires of the students. While observations of these changes can only be considered anecdotal, they are nevertheless worthy of presentation here. First, it appeared that longer verbal response chains were emitted by the students as they progressed through the final phases. For example, students frequently answered "who-doing" questions with responses such as: "She is reading a book."; "He is cutting paper with a scissors." These responses are in marked contrast to the single word responses typically observed prior to the program.

Second, the students often generalized pronouns appropriately across classroom activities. For example, during the baseline trials of another program concerned with the development of preposition usage skills, the teacher asked each student where he or she was standing. Several students reported their positions by saying, "I am standing in front of Marge."

Third, it appeared that some degree of generalization also occurred in the student's ability to visually discriminate males and females. After the students had reached criterion in Phase IV using male and female classmates, the teacher used herself, the student teacher, and the principal in various male-female combinations. All of the students responded correctly to the cues "Touch a he" and "Touch a she" the first time they were requested to do so.

In as much as the students are in need of other communication skills, it seems that the teacher can now entertain several programmatic options which include: requiring longer, more embellished responses; requiring responses to "who" questions using other verbs and a different teacher; developing similar responses using the pronouns "it," "we," and "they"; and developing similar responses to other "wh" question forms.

Finally, now that the skills taught here have been developed in oral communication situations, they will be applied to reading materials in some of the following ways:

1. Students will be asked to answer "who" questions about pictures of characters in their reading books.

2. Students will be asked to read a sentence (e.g., He is standing.) and select the picture that illustrates it.

3. Students will be asked to read a story and answer "who-doing" questions about the characters.

Addendum

An attempt was made to investigate whether the skills acquired would be performed during other classroom activities in response to "who-doing" questions other than those taught. Four activities were chosen (reading, math, printing, and self-help) and two questions were asked during each activity (e.g., "Who is tying the shoe?"; "Who is counting the pennies?"). Either the teacher, the student himself, or a male or female classmate performed an action. The student was then asked a "who-doing" question and his/her response was recorded by the teacher without indicating accuracy. All four of the students in Group A responded correctly to both questions in each of the four activities the first time they were requested to do so.

Thus, it would appear that if environmental demands are made on the students that require them to use pronouns in answer to "who" questions, they are capable of meeting such demands. Unfortunately, the school year ended before this program supplement could be initiated with Group B.

Appendix A

Student 1

I. History

A. Sex: Female

B. C.A. as of September 1973: 10 years 5 months

C. I.Q.: 53 (Binet) M.A.: 5 years 5 months

D. Level of retardation (AAMD): "Moderately retarded." "Upper limits of trainable range."

E. Medical Diagnosis: "Severe vision problem which definitely interferes with her ability to progress in school", "very high myopia", poor muscle coordination.

F. Psychological Descriptors: Generally well-behaved, "somewhat hyperactive", "excessive movement but controllable", squinting.

G. Placement History:

1. Natural home: Since birth.
2. Day Care Center: Kiddie Camp, Madison, WI. - to 1969
   (Year of entry to Kiddie Camp not given)
3. Public School: Sunnyside, Madison, WI. - 1969-1971
   Glenn Stephens, Madison, WI. - Since September 1971

II. Initial Maladaptive Classroom Behaviors:

She grabbed any item that was within her reach, and also exhibited excessive movement.
When reprimanded or when she became frustrated, she would slap another child.

Student 2

I. History

A. Sex: Female

B. C.A. as of September 1973: 8 years 5 months

C. I.Q.: 51 (Binet) M.A.: 4 years 8 months

D. Level of retardation (AAMD): "Moderately retarded."

E. Medical Diagnosis: "Mongoloid."

F. Psychological Descriptors: "Hyperactive", "would not attend".

G. Placement History:

1. Natural home: Since birth.
2. Day Care Center: Kiddie Camp, Madison, WI. - 1968-1969 and June-July, 1970. Montessori Child's House, Madison, WI. - 1969-February 1971.
3. Public School: Badger, Madison, WI. - February-June 1971. Glenn Stephens, Madison, WI. - Since September 1971.

II. Initial Maladaptive Classroom Behaviors:

She was stubborn and inattentive at times.
Her tongue frequently hung out of her mouth and she often made inappropriate noises.

Student 3

I. History

A. Sex: Male

B. C.A. as of September 1973: 8 years 7 months

C. I.Q.: 54 (Binet) M.A.: 4 years 7 months

D. Level of retardation (AAMD)· "Moderately retarded."

E. Medical Diagnosis: "Mongoloid"; had surgery on both knees in 1970.

F. Psychological Descriptors: "Hyperactive," "aggressive," needs structured situation, continually testing, adjusts slowly to new people.

G. Placement History:

1. Natural home: Birth to 2 years.
2. Foster home: Since 2 years old.
3. Day Care Center: Kiddie Camp, Madison, WI. - 1968-1969.
4. Public School: Lapham, Madison, WI. - 1969-1970.
   Badger, Madison, WI. - 1970-1972.
   Glenn Stephens, Madison, WI. - Since September 1972.

II. Initial Maladaptive Classroom Behaviors:

He pulled hair, did not follow directions to clean up toys, and giggled inappropriately when in a group with someone who couldn't handle him.

Student 4

I. History

A. Sex: Male

B. C.A. as of September 1973: 7 years 7 months

C. I.Q.: 46 (Binet) M.A.: 3 years 11 months

D. Level of retardation (AAMD): "Moderately retarded."

E. Medical Diagnosis: None listed in records.

F. Psychological Descriptors: "Hyperactive, but controllable," "easily distractible," "nonsense verbalization at times," "language development problem," non-compliant behaviors, cries frequently.

G. Placement History:

1. Natural home: Since birth.
2. Day Care Center: Kiddie Camp, Madison, WI. - 1969-1971.
3. Public School: Glenn Stephens, Madison, WI. - Since September 1971.

II. Initial Maladaptive Classroom Behaviors

He cried easily, refused to follow directions, bothered other children, and was easily upset.

Student 5

I. History

A. Sex: Female

B. C.A. as of September 1973: 8 years 8 months

C. I.Q.: 44 (Binet) M.A.: 4 years 2 months

D. Level of retardation (AAMD): "Moderatcly retarded."

E. Medical Diagnosis: "Down's Syndrome."

F. Psychological Descriptors: "Stubborn, aggressive tendencies," "non-compliant," behavior inconsistent.

G. Placement History:

1. Natural home: Since birth.
2. Day Care Center: Day Training Center, Kalamazoo, MI. - 1968-1969.
3. Public School: John F. Kennedy School, Kalamazoo, MI. - 1969-1970.
   Sunnyside, Madison, WI. - 1970-1971.
   Badger, Madison, WI. - 1971-1972.
   Glenn Stephens, Madison, WI. - Since September 1972.

II. Initial Maladaptive Classroom Behaviors:

She bothered other children, did not work consistently, and had difficulty playing appropriately with other children. She was bossy, ordered others around, and sought adult attention, at times inappropriately.

Student 6

I. History

A. Sex: Female

B. C.A. as of September 1973: 8 years

C. I.Q.: 52 (Binet) M.A.: 4 years 4 months

D. Level of retardation (AAMD): "Moderately retarded."

E. Medical Diagnosis: "Mongoloid," frequent middle ear infections.

F. Psychological Descriptors: "Short attention span."

G. Placement History:

1. Natural home: Since birth.
2. Day Care Center: MARC Nursery Program, Madison, WI. - (Dates not given). Kiddie Camp, Madison, WI. - To June 1971 (Date of entry to Kiddie Camp not given).
3. Public School: Badger, Madison, WI. - 1971-1972.
   Glenn Stephens, Madison, WI. - Since September 1972.

II. Initial Maladaptive Classroom Behaviors:

She imitated the inappropriate behaviors of her peers, like giving orders and using inappropriate language. She put her hands in her mouth frequently and liked to touch the teacher's hair.

Student 7

I. History

A. Sex: Male

B. C.A. as of September 1973: 6 years 10 months

C. I.Q.: 56 (Binet) M.A.: 4 years 5 months

D. Level of retardation (AAMD): "Moderately retarded."

E. Medical Diagnosis: "Down's Syndrome," vision problem (alternating estropia) corrected by strong lenses and patches alternating on eyes.

F. Psychological Descriptors: "Mischievious," "short attention span," "hyperactive, easily distracted," "severe behavior problem","echolalic speech."

G. Placement History:

1. Natural home: Since birth.
2. Day Care Center: MARC Pre-school, Madison, WI. - June-September 1969.
   Kiddie Camp, Madison, WI. - 1969-1971.
3. Public School: Badger, Madison, WI. - 1971-1972.
   Glenn Stephens, Madison, WI. - Since September 1972.

II. Initial Maladaptive Classroom Behaviors:

He tended to be overstimulated and had many stimulating behaviors. He also spit at people and pulled hair. He was often inattentive; did not respond to classroom directions and responded inappropriately at times with verbal outbursts.

Student 8

I. History

A. Sex: Male

B. C.A. as of September 1973: 11 years 11 months

C. I.Q.: 37 (Binet) M.A.: 3 years 8 months

D. Level of retardation (AAMD): "Severely retarded."

E. Medical Diagnosis: "Mongoloid," orthopedic impairment - wears short leg braces.

F. Psychological Descriptors: "Temper outbursts, noncompliant," disrupts group activities, "inattentive," shows off, "verbalizations infrequent."

G. Placement History:

1. Foster home: Since September 1972.
2. Public institution: Central Colony, Madison, WI. - To September 1972. (Date of entry to Central Colony not given)
3. Day Care Center: Kiddie Camp, Madison, WI. - 1969-1970.
4. Public School: Glenn Stephens, Madison, WI. - Since September 1972.

II. Initial Maladaptive Classroom Behaviors:

He displayed temper outbursts when not given what he wanted; frequently said "No," and had trouble quietly waiting his turn. His speech was often difficulty to understand, and he hit himself and other children.

Appendix B

Date ____________ **Phase I** Part 1 Trial ________

Name	I	you	he	she	am	are	is	standing	waving	cutting	combing	reading	zipping	

(Total)

Cue: "$\underline{S}_1$, say 'I'."

1. If $\underline{S}$ immediately imitates the verbal model, record (+).
2. If $\underline{S}$ imitates model as in Step 2, record (M_2).
3. If $\underline{S}$ imitates model as in Step 3, record (M_3).
4. If $\underline{S}$ does not imitate the model as in Step 4, record (-).

Date ____________ Phase I Part 2 Trial ________

Name	I am	You are	He is	She is	

(Total)

Cue: "$\underline{S}_1$, say 'I am'."

1. If $\underline{S}$ immediately imitates the verbal model, record (+).
2. If $\underline{S}$ imitates model as in Step 2, record (M_2).
3. If $\underline{S}$ imitates model after components are modeled in Step 3, record (M_3).
4. If $\underline{S}$ imitates model with partial prompt as in Step 4, record (P).
5. If $\underline{S}$ does not imitate model as in Step 5, record (-).

Date ____________ Phase I Part 3 Trial ________

Set I

Name	I am standing	I am waving	I am cutting	I am combing	I am reading	I am zipping	

(Total)

Cue: "$\underline{S}_1$, say 'I am standing'."

Date ____________ Set II Trial ________

Name	You are standing	You are waving	You are cutting	You are combing	You are reading	You are zipping	

(Total)

Cue: "$\underline{S}_1$, say 'You are standing'."

Date ____________________ Set III Trial __________

Name	He is standing	He is waving	He is cutting	He is combing	He is reading	He is zipping	

(Total)

Cue: "$\underline{S}_1$, say 'He is standing'."

Date ____________________ Set IV Trial __________

Name	She is standing	She is waving	She is cutting	She is combing	She is reading	She is zipping	

(Total)

Cue: "$\underline{S}_1$, say 'She is standing'."

1. If S immediately imitates the model, record (+).
2. If S imitates the model, as in Step 2, record (M_2).
3. If S imitates the model after the components are modeled in Step 3, record (M_3).
4. If S imitates model with partial prompt as in Step 4, record (P).
5. If S does not imitate the model in Step 5, record (-).

Date ____________________ Phase II Part 1 Trial __________

Name	standing	waving	cutting	combing	reading	zipping	

(Total)

Cue: "Show me __________."

1. If S immediately follows T's verbal cue, record (+).
2. If S follows verbal cue after T models response as in Step 2, record (M).
3. If S follows verbal cue with physical guidance from T as in Step 3, record (P).

Date ____________________ Phase II Part 2 Trial __________

Cue: "Touch someone __________."

	S_1	S_2	S_3	S_4
standing - waving				
standing - waving				
cutting - combing				
cutting - combing				
reading - zipping				
reading - zipping				

1. If S immediately follows verbal cue, record (+).
2. If S follows cue after T models correct response as in Step 2, record (M).
3. If S follows verbal cue with physical guidance from T as in Step 3, record (P).

Date ____________________ Phase II Part 3 Trial __________

Name	standing	waving	cutting	combing	reading	zipping	
							(Total)

Cue: "What is S_1 doing?"

1. If S immediately labels action, record (+).
2. If S labels action after modeled by T as in Step 2, record (M).
3. If S labels action after second model by T as in Step 3, record (M_2).
4. If S does not label action as in Step 4, record (-).

Date ____________ Phase III Parts 1 & 2 Trials ________

Name	T_1	T_2	T_3	T_4

Part 1: Cue: "$\underline{S}_1$, touch $\underline{S}_1$"
"$\underline{S}_2$, touch $\underline{S}_2$"

Part 2: Cue: "$\underline{S}_1$, touch $\underline{T}$"
"$\underline{S}_2$, touch $\underline{T}$"

1. If $\underline{S}$ immediately follows verbal cue, record (+).
2. If $\underline{S}$ follows cue after $\underline{T}$ models correct response as in Step 2, record (M).
3. If $\underline{S}$ follows verbal cue with physical guidance from $\underline{T}$ as in Step 3, record (P).

Date ____________ Phase III Part 3 Trial ________

Name	S_1	S_2	S_3	S_4	
	╳				
		╳			
			╳		
				╳	

(Total)

Cue: "$\underline{S}_1$, touch $\underline{S}_2$" ($\underline{S}_3$ and $\underline{S}_4$)

1. If $\underline{S}$ immediately follows verbal cue, record (+).
2. If $\underline{S}$ follows cue after $\underline{T}$ models correct response as in Step 2, record (M).
3. If $\underline{S}$ follows verbal cue with physical guidance from $\underline{T}$ as in Step 3, record (P).

Date ____________________ Phase III Part 4 Trial __________

Name	S_1	S_2	S_3	S_4	T	

(Total)

Cue: "$\underline{S}_1$, touch $\underline{S}_1$" ($\underline{S}_2$, $\underline{S}_3$, $\underline{S}_4$ and $\underline{T}$)

1. If S immediately follows verbal cue, record (+).
2. If S follows cue after T models correct response as in Step 2, record (M).
3. If S follows verbal cue with physical guidance from T as in Step 3, record (P).

Date ____________________ Phase IV Part 1 Trial __________

Males (S_1, S_3, S_5) Females (S_2, S_4, S_6)

Name	S_1 & S_2	S_3 & S_4	S_5 & S_6	
S_1				
S_2				
S_3				
S_4				

(Total)

Cue: "Touch a he"

1. If S immediately follows T's verbal cue, record (+).
2. If S follows verbal cue after modeled by T as in Step 2, record (M).
3. If S follows T's verbal cue with physical guidance from T as in Step 3, record (P).

Date ____________________ Phase IV Part 2 Trial __________

Males (S_1, S_3, S_5) Females (S_2, S_4, S_6)

Name	S_1 & S_2	S_3 & S_4	S_5 & S_6	
S_1				
S_2				
S_3				
S_4				

(Total)

Cue: "Touch a she."

1. If S immediately follows verbal cue, record (+).
2. If S follows verbal cue after modeled by T as in Step 2, record (M).
3. If S follows verbal cue with physical guidance from T as in Step 3, record (P).

Date ____________________ Phase IV Part 3 Trial __________

Males (S_1, S_3, S_5) Females (S_2, S_4, S_6)

Name	$S_{\underline{1}}$ & S_2	S_1 & $S_{\underline{2}}$	$S_{\underline{3}}$ & S_4	S_3 & $S_{\underline{4}}$	$S_{\underline{5}}$ & S_6	S_5 & $S_{\underline{6}}$	
S_1							
S_2							
S_3							
S_4							

(Total)

Cue: "Touch a he; Touch a she."

1. If S immediately follows verbal cue, record (+).
2. If S follows verbal cue after modeled by T as in Step 2, record (M).
3. If S follows verbal cue with physical guidance from T as in Step 3, record (P).

Date ____________________ Phase V Part 1 Trial(s) _______

Cue: "Who am I?"

Name	T_1	T_2	T_3

1. If S immediately follows verbal cue, record (+).
2. If S responds to verbal cue after first model by T as in Step 2, record (M_1).
3. If S responds to verbal cue after second model by T as in Step 3, record (M_2).
4. If S does not respond correctly to T's verbal cue as in Step 4, record (-).

Date ____________________ Phase V Part 2 Trial(s) _______

Cue: "Who are you?"

Name	T_1	T_2	T_3

1. If S immediately follows verbal cue, record (+).
2. If S responds to verbal cue after first model by T as in Step 2, record (M_1).
3. If S responds to verbal cue after second model by T as in Step 3, record (M_2).
4. If S does not respond correctly to T's verbal cue as in Step 4, record (-).

Date ____________________ Phase V Part 3 Trial __________

Cues: "Who am I?; Who are you?"

Name	T	Self	

(Total)

1. If $\underline{S}$ immediately follows verbal cue, record (+).
2. If $\underline{S}$ follows verbal cue after first model by $\underline{T}$ as in Step 2, record (M_1).
3. If $\underline{S}$ responds to verbal cue after second model by $\underline{T}$ as in Step 3, record (M_2).
4. If $\underline{S}$ does not respond correctly to $\underline{T}$'s verbal cue as in Step 4, record (-).

Date ____________________ Phase V Part 4 Trial __________

Males (S_1, S_3, S_5) Cue: "Who is he?"

Name	S_1	S_3	S_5	
S_1	X			
S_2			X	
S_3		X		
S_4			X	

(Total)

1. If $\underline{S}$ immediately follows verbal cue, record (+).
2. If $\underline{S}$ follows verbal cue after first model by $\underline{T}$ as in Step 2, record (M_1).
3. If $\underline{S}$ responds to verbal cue after second model by $\underline{T}$ as in Step 3, record (M_2).
4. If $\underline{S}$ does not respond correctly to $\underline{T}$'s verbal cue as in Step 4, record (-).

Date ____________________ Phase V Part 5 Trial __________

Cue: "Who is she?"

Males (S_1, S_3, S_5) Females (S_2, S_4, S_6)

Name	S_2	S_4	S_6	
S_1			X	
S_2	X			
S_3			X	
S_4		X		

(Total)

1. If $\underline{S}$ immediately responds to verbal cue, record (+).
2. If $\underline{S}$ responds to verbal cue after first model by $\underline{T}$ as in Step 2, record (M_1).
3. If $\underline{S}$ responds to verbal cue after second model by $\underline{T}$ as in Step 3, record (M_2).
4. If $\underline{S}$ does not respond correctly to $\underline{T}$'s verbal cue as in Step 4, record (-).

Date ____________________ Phase V Part 6 Trial __________

Cues: "Who is he?; Who is she?"

Males (S_1, S_3, S_5) Females (S_2, S_4, S_6)

Name	S_1	S_2	S_3	S_4	S_5	S_6	
S_1	X	X					
S_2	X	X					
S_3			X	X			
S_4			X	X			

(Total)

1. If S immediately responds to verbal cue, record (+).
2. If S responds to verbal cue after first model by T as in Step 2, record (M_1).
3. If S responds to verbal cue after second model by T as in Step 3, record (M_2).
4. If S does not respond correctly to T's verbal cue as in Step 4, record (-).

Date ____________________ Phase V Part 7 Trial __________

Cues: "Who am I?; Who are you?;
Who is he?; Who is she?"

Name	T	S_1	S_2	S_3	S_4	S_5	S_6	
S_1							X	
S_2						X		
S_3							X	
S_4						X		

(Total)

1. If S immediately responds to verbal cue, record (+).
2. If S responds to verbal cue after first model by T as in Step 2, record (M_1).
3. If S responds to verbal cue after second model by T as in Step 3, record (M_2).
4. If S does not respond correctly to T's verbal cue as in Step 4, record (-).

Baseline - Phases VI, VII, IX

Date ____________________ Phase __________ Trial __________

Name	(+) or (-)	Response (1)	Response (2)

Correct response ____________________

Cue: "Who is __________?"

1. If S says the correct response, record (+).
2. If S says anything else, or nothing, record (-) and write response under Response (1).
3. If S includes proper name in 1st response, record first response (1). Then say, "Say it another way." Record 2nd response under Response (2).

Teaching and Rebaseline - Phases VI-X

Date ____________________ Phase __________ Part __________ Trial __________

Name	1st response	record

Correct response ____________________

Cue: "Who is __________?"

Step 1: Correct response: "I am _____" (record +)

Step 2: If S responds correctly to the cues in Step 2, record S's first response and:

(a)	(b)	(c)
Proper name R	Incomplete R	Incorrect R
$+C_2$ (a) (correct R - 2nd cue)	$+C_2$ (b) (correct R - 2nd cue)	M_1

Step 3: If S responds correctly to the cues in Step 3, record S's first response and:

M_1	M_1	M_2

Step 4: If S responds correctly to the cues in Step 4 (a or b) record S's first response and:

If S does not imitate the 2nd model, record:

M_2	M_2	(-)

Step 5: If S does not imitate the 2nd model as in Step 5 (a or b) record first response and:

(-)	(-)

APPENDIX C Table I Teaching Trials to Criterion Group A

NAME	PHASE I						PHASE II			PHASE III				PHASE IV		
	Part 1	Part 2	Part 3				Part 1	Part 2	Part 3	Part 1	Part 2	Part 3	Part 4	Part 1	Part 2	Part 3
Group A			Set I	Set II	Set III	Set IV										
S_1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
S_2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	3
S_3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
S_4	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	6

	PHASE V							PHASE VI		PHASE VII		PHASE VIII	
Group A	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Set I	Set II	Set I	Set II	Set I	Set II
S_1	0	0	0	0	0	0	0	4	0	3	0	0	0
S_2	0	0	0	0	0	0	0	6	0	7	0	5	0
S_3	0	0	0	0	0	0	0	4	0	4	0	0	0
S_4	0	0	0	0	0	0	0	5	0	4	0	0	0

	PHASE IX						PHASE X	
	Part 1		Part 2		Part 3			
Group A	Set I	Set II	Set I	Set II	Set I	Set II	Set I	Set II
S_1	4	0	3	0	0	0	0	0
S_2	4	0	3	0	0	0	0	0
S_3	4	0	3	0	0	0	0	0
S_4	4	0	5	0	4	0	0	0

Criterion was set at 3 consecutive correct trials without teacher assistance
"0" refers to the fact that criterion was reached during the 2 baseline trials.
"3" refers to the fact that criterion was reached after the first 3 teaching trials.

Table II Teaching Trials to Criterion Group B

NAME	PHASE I						PHASE II			PHASE III				PHASE IV		
	Part 1	Part 2	Part 3				Part 1	Part 2	Part 3	Part 1	Part 2	Part 3	Part 4	Part 1	Part 2	Part 3
Group B			Set I	Set II	Set III	Set IV										
S_5	0	0	6	7	5	6	0	0	3	0	0	0	0	4	3	3
S_6	0	0	0	0	4	0	0	0	0	0	0	0	0	3	5	3
S_7	0	0	8	9	5	5	0	0	3	0	0	0	0	5	8	5
S_8	0	0	8	6	5	5	0	0	4	0	0	0	0	4	3	4

	PHASE V							PHASE VI		PHASE VII		PHASE VIII	
Group B	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Set I	Set II	Set I	Set II	Set I	Set II
S_5	0	0	0	0	0	0	0	5	0	4	0	0	0
S_6	0	0	0	0	0	0	0	5	0	6	0	4	0
S_7	0	0	0	0	0	0	0	6	0	6	0	5	0
S_8	0	0	0	0	0	0	0	5	0	4	0	7	0

	PHASE IX						PHASE X	
	Part 1		Part 2		Part 3			
Group B	Set I	Set II	Set I	Set II	Set I	Set II	Set I	Set II
S_5	4	0	4	0	0	0	0	0
S_6	4	0	3	0	0	0	3	0
S_7	4	0	4	0	0	0	6	0
S_8	4	0	5	0	4	0	4	0

Criterion was set at 3 consecutive correct trials without teacher assistance
"0" refers to the fact that criterion was reached during the 2 baseline trials.
"3" refers to the fact that criterion was reached after the first 3 teaching trials.

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AN APPROACH TOWARD DEVELOPING THE CHART STORY READING SKILLS OF SEVERELY HANDICAPPED STUDENTS

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Introduction

A successful method of teaching reading to trainable mentally retarded children is the "chart story" approach. Its merits and effectiveness have been documented by Huppler (1972) and Cartwright (1973). The traditional chart story approach has been criticized because direct comprehension checks are difficult to obtain. This program was designed to facilitate these checks. We initially taught the students to sight read six nouns, six adjectives, and eight verbs in isolation, with checks for comprehension. After the students had mastered the words, in isolation they were taught to utilize them in one of six suggested chart stories. We altered the traditional chart story to include one or more directives which allowed comprehension checks while the students were reading the story. This program is intended as an initial reading experience, and it is hoped that it will facilitate further successful reading experiences.

Method

1. Present materials.

2. Present instructional cue.

3. Response to cues
    a. If S responds correctly - reinforce.
    b. If S responds incorrectly - T models correct response and repeats instructional cue. If S again responds incorrectly, T continues to model and or primes the correct response until S responds correctly.

Definitions

1. Model - T performs correct response.

2. Prime - T physically or verbally guides S through the response.

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Measurement

1. Delineate potential reinforcers for each child.

2. Baseline - T gives cues for each phase of a given program (three consecutive presentations), responses are recorded but no indication as to the accuracy of the response is given S.

3. Instructional - T takes responses by response measurement of S's responses.
   a. correct response = +
   b. incorrect response = -
   c. modeled response = M
   d. primed response = P

4. Program criterion.
   a. 100% correct responding on three consecutive trials.

Prerequisite Behaviors

1. imitative skills

2. ability to see, hear, and articulate sounds

3. attending

4. eye contact

Nouns

Terminal Objective: When presented with each noun flashcard, the student will verbally label the noun and touch the corresponding object from a set of six.

Phase I: S will touch the correct object from a set of six when given the verbal cue "Touch ______."

Sets & Materials: balloon, glass filled with juice, apple, portable chalkboard small enough to set on the table, piece of white chalk, ball.

Cue	Response
T places six objects on the table in front of S and says "(S) touch balloon."	S touches balloon.

The identical procedure is utilized with all the materials.

Phase II: S will verbally label each noun flashcard displaying a noun from Phase I.

Sets & Materials: 2" x 4" flashcards displaying each noun from Phase I in magic marker.

Cue	Response
T holds up a flashcard displaying the printed noun "balloon," and says, "What is this word?"	S says "balloon."

The identical procedure is used with the remaining flashcards.

Phase III: S will verbally label each noun flashcard and touch the corresponding object from a set of six.

Sets & Materials: Flashcards and objects from Phases I and II are utilized.

Cue	Response
T places six objects in front of S. T holds up flashcard displaying the noun, "balloon" and says "What is this word?"	S says "balloon."
"Good, touch the balloon."	S touches balloon.

The identical procedure is used with the remaining flashcards and objects.

Verbs

Terminal Objective: When presented with verb-noun combination flashcards the student will verbally label the verb-noun combination and perform the stated action.

Phase I: Given a verbal cue of the verb-noun form S will pick up the correct object from a set of four and perform the action stated.

Sets & Materials: balloon, apple, ball, pitcher of juice, a glass, chalk, and a portable chalkboard.

Set I - hit balloon
eat apple
bounce ball
pour juice

Set II - touch balloon
roll ball
drink juice
draw on chalkboard

Cue	Response
T places four objects in front of S and says, "Hit balloon."	S hits balloon.

The identical procedure is used with all the verb-noun combinations.

Phase II: S will verbally label each verb flashcard.

Sets & Materials: 2" x 4" flashcards displaying each verb in magic marker.

Set I - hit	Set II - touch
eat	roll
bounce	drink
pour	draw

Cue	Response
T holds up a flashcard displaying the printed noun "hit," and says, "What is this word?"	S says "hit."

The identical procedure is used with all the verbs.

Phase III: S will verbally label each verb-noun combination flashcard.

Sets & Materials: 2" x 4" flashcards displaying each verb-noun combination in magic marker.

Set I - hit balloon	Set II - touch balloon
eat apple	roll ball
bounce ball	drink juice
pour juice	draw on chalkboard

Cue	Response
T holds up a flashcard displaying the printed verb-noun, "hit balloon," and says, "What are these words?"	S says, "hit balloon."

The identical procedure is used with all the verb-noun combinations.

Phase IV: S will verbally label each verb-noun combination flashcard and perform the stated action.

Sets & Materials: Flashcards and objects from Phases I and II were utilized.

Cue	Response
T places four objects in front of S. T holds up a flashcard displaying the verb-noun combination, "hit balloon," and says, "What are these words?"	S says "hit balloon."
T says "Do it."	S hits balloon.

The identical procedure is used with the verb-noun combinations.

Adjectives - (colors)

Terminal Objective: When presented with a flashcard displaying a color word, the student will verbally label the word and touch the corresponding color from a set of four.

Phase I: S will touch the correct color from a set of four when given the verbal cue, "Touch ______."

Sets & Materials: 4" x 4" pieces of construction paper in red, white, yellow and green.

Cue	Response
T places four color cards in front of S and says, "Touch red."	S touches red card.

The identical procedure is used with all the colors.

Phase II: S will label each color word flashcard.

Sets & Materials: 2" x 4" flashcards displaying each color word from Phase I in magic marker.

Cue	Response
T holds up a flashcard displaying the printed word, "white" and says, "What is this word?"	S says "white."

The identical procedure is used with all the colors.

Phase III: S will verbally label each color word flashcard and touch the corresponding color from a set of four.

Sets & Materials: Flashcards and colors from Phases I and II are utilized.

Cue	Response
T places four color cards in front of S. T holds up a flashcard displaying the word, "red," and says, "What is this word?"	S says "red."
T says "touch it."	S touches red color card.

The identical procedure is used with all colors.

Adjectives: (big and little)

Terminal Objective: When presented with adjective-noun flashcards (big noun or little noun), the student will verbally label the adjective-noun combination and touch the corresponding object from a set of opposites (e.g., big balloon, little balloon).

Phase I: S will touch the correct member of a set of size - opposite objects when given the verbal cue, "Touch (big/little) noun."

Sets & Materials: big and little balloons identical in color, big and little balls identical in color, little portable chalkboard and big classroom chalkboard.

Cue	Response
T places big balloon and little balloon in front of S and says, "Touch the big/little balloon."	S touches big/little balloon.

The identical procedure is used for all sets.

Phase II: S will verbally label each adjective flashcard.

Sets & Materials: 2" x 4" flashcards displaying each adjective from Phase I in black magic marker.

Cue	Response
T holds up a flashcard displaying the printed word "big" or "little" and says "What is this word?"	S says "big" or "little."

Phase III: S will verbally label each adjective-noun combination flashcard.

Sets & Materials: 2" x 4" flashcards displaying each adjective-noun combination from Phase I in magic marker.

Cue	Response
T holds up flashcard displaying printed words "big balloon" or "little balloon" and says, "What are these words?"	S says "big/little balloon."

The identical procedure is used with all the sets.

Phase IV: S will verbally label each adjective-noun combination flashcard and touch the corresponding object from a set of size-opposites (e.g., big balloon or little balloon).

Sets & Materials: Flashcards and objects from Phase I and III are utilized.

Cue	Response
T places a big balloon and little balloon in front of S. T holds up a flashcard displaying the printed words "big balloon" or "little balloon," and says, "What are these words?"	S says "big/little balloon."
T says "Touch it."	S touches big/little balloon.

The identical procedure is used for all sets.

Review: After completion of Phases I through IV, the S's ability to label all words in mixed order is measured. Additional trials are implemented to correct error responses.

Chart Stories

Terminal Objective: S(s) will be able to: a) verbally label every word in each chart story in context and perform the directive(s) in each story when the story is printed on a 24" by 36" postercard, and b) verbally label every word in each chart story in context when printed on an 8 1/2" x 11" sheet of white lined paper.

Measurement: A. Response by response measurement is taken on S's performance of: a) verbally labeling the words in context when printed on a 24" by 36" postercard; b) verbally labeling the words in context when printed on a 24" by 36" postercard and performing the directive(s); and c) verbally labeling the words in context when printed on an 8 1/2" by 11" paper.

B. Baselines of S's ability to read each chart story are not taken prior to writing the chart story. Our primary reason for this is that it would destroy the spontaneity of the experience, and prove to be frustrating for the child.

Program Considerations: Conjunctions, articles, pronouns and intransitive verbs are not taught in isolation for the following reasons: a) they have no visible referent, and b) they will occur frequently in the student's future reading material and may be taught in isolation after the student has had more practice labeling them in context.

Phase I: T: a) presents stimuli and performs actions to elicit the words in the chart story, b) prints the story on a 24" by 36" postercard, and c) verbally labels the words.

Materials for Phase I: (example chart story)

1. 24" by 36" lined postercard (light color)
2. small yellow ball
3. black felt tip pen

a. T presents stimuli and performs actions to verbally elicit the chart story from the S(s). The following is an example of how the first chart story might be elicited.

Cue	Response
(T is holding a yellow ball) "What is this?"	"ball"
"Good, does anyone know what color it is?"	"yellow"
"Yes, that's right, it's a yellow ball."	
"What can I do with the ball?"	"bounce it" (responses will vary and T may have to model the desired answer)
"Yes, I can bounce the ball." (T bounces the ball).	
"What did I do with the ball?"	"bounced it"
"What else can I do with the ball?"	"roll it" (again, responses may vary, so T may have to model the desired answer)
(T rolled the ball) "What did I do with the ball?"	"rolled it"

b. & c. T prints the chart story on a postercard (using approximations of S's answers) and then verbally labels the words.

Cue	Response
"Let's write a story about a ball."	
"What shall we call the story?"	"ball"
(T prints the word Ball on the top line of the postcard and verbally labels the word.)	

Cue	Response
"Good, the title of our story is ball."	
"What color is the ball?"	"yellow"
"Good, the ball is yellow. I will print that." (T prints The ball is yellow. on the second line of the postercard and verbally labels the sentence after it is printed.	
"What did I do with the ball?"	"bounced (rolled) the ball"
"Good, I will print that." (T prints Bounce the ball on the third line of the postercard and verbally labels the sentence after it is printed.)	
"What else did I do with the ball?"	"rolled (bounced) the ball"
"Good, I will print that." (T prints Roll the ball on the fourth line of the postercard and verbally labels the sentence after it is printed.)	
"Now we have a story. I will point to each word and read the story for you." (T points to each word as he verbally labels each word in context.)	
"Now you read the story with me while I point to the words." (T rereads story pointing to each word as he verbally labels it in context.)	Ss attempt to verbally label words along with T as T points to and labels the words.

Phase II: S(s) will verbally label the words in the chart story when printed on a 24" by 36" postercard.

Materials for Phase II: (example chart story)
Same as Phase I.

a. S(s) verbally label words as T points to each individual word.

Cue	Response
"I will point to each word as you read the story."	S(s) verbally labels the words as T points to each word.

b. S(s) will verbally label words.

Cue	Response
"I want you to read the story by yourself."	S(s) verbally labels words.

Phase III: S(s) will verbally label the words in the chart story and perform the directive(s).

Sets & Materials for Phase III: (example chart story)
plastic glass, white chalk, yellow ball

Cue	Response
"Read the story and do what it tells you." (T places 3 objects on table in front of S)	S(s) verbally labels the words in context and performs the directive(s) in the story. (e.g., in example chart story, S would have access to a yellow ball, along with two other objects, and would be expected to bounce the ball and roll the ball when the appropriate directive was verbally labeled in the story.)

Phase IV: S(s) will verbally label the words in context when the chart story is printed on 8 1/2" by 11" paper.

Materials for Phase IV: (example chart story)
story printed on lined 8 1/2" by 11" white paper.

Cue	Response
(T gives S 8 1/2" by 11" sheet of paper with chart story printed on it.) "This is the same story we read on the big sheet of paper. I want you to read the story."	S(s) label(s) the words in context.

Suggested Chart Stories

Note: The following chart stories are based upon words that were taught as sight word vocabulary in previous phases. Every story uses the following basic materials: a) 24" by 36" postercard, b) black felt tip pen, and c) 8 1/2" by 11" lined white paper. Additional materials are listed before each story.

1. Additional Materials:

    a. yellow ball
    b. 2" piece of white chalk
    c. small plastic glass

    Story: Ball

    The ball is yellow.
    Bounce the ball.
    Roll the ball.

2. Additional Materials:

    a. 1 quart pitcher containing one pint of red punch.
    b. small plastic glass
    c. yellow ball
    d. red apple

    Story: Juice

    My juice is red.
    Pour the red juice.
    Drink the red juice.

3. Additional Materials:

    a. small portable green chalkboard
    b. 2" piece of white chalk
    c. red apple
    d. 1 quart pitcher
    e. large balloon

    Story: Chalkboard

    The chalkboard is green.
    The chalk is white.
    Draw on the chalkboard.

4. Additional Materials:

    a. red apple
    b. small balloon
    c. yellow ball
    d. small plastic glass

Story: Apple

My apple is red.
Eat the apple.
My apple is red and white.

5. Additional Materials:

   a. big balloon
   b. little balloon
   c. red apple
   d. 2" piece of chalk
   e. portable green chalkboard

Story: Balloon

This balloon is big.
This balloon is little.
Touch the big balloon.
Touch the little balloon.
Hit the little balloon.

THE USE OF "WHOLE WORD PROCEDURES" TO DEVELOP BASIC COMPONENTS OF SELECTED CHART STORY READING SKILLS IN SEVERELY HANDICAPPED YOUNG STUDENTS[1]

By

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Society perceives severely handicapped students as having substantially lower learning capabilities than those of their non-handicapped age peers. Consequently, there is a tendency for even professionals to assume that severely handicapped students can only acquire limited, if any, reading skills (Burton, 1974; Doll, 1941; Kirk, 1972). However, it is becoming increasingly evident that most severely handicapped students will function in public communities rather than in segregated residential facilities (Gilhool, 1973; Sontag, Burke and York, 1974). If these students are to survive in post-school community living settings as self-actualizing economically productive citizens, it is imperative that they possess the abilities necessary to read a substantial body of complex printed material (e.g., newspapers, prescriptions, bus schedules, recipes, work schedules).

Available literature has yet to suggest that one approach to teaching reading is more efficacious than another (Gray, Baker, & Stancyk, 1969). However, available literature does suggest that the systematic application of basic principles of task analysis, acquisition, and measurement may provide a conglomerate of instructional tactics which result in students acquiring at least basic reading skills. For example, it has been demonstrated that "trainable level" students have been systematically taught to label sight words (Brown, Hermanson, Klemme, Haubrich & Ora, 1969) to functionally read nouns and adjective-noun phrases (Brown, Jones, Troccolo, Heiser, Bellamy & Sontag, 1972) to functionally read unconjugated action verbs (Brown, Huppler, Pierce, York & Sontag, 1974) and to functionally read directive sentences which contained prepositions (Brown & Perlmutter, 1971). However, while the programs cited above are encouraging, at least two crucial issues were not addressed: a) in criterion phases, manifestations of comprehension were dependent upon the provision of specific teacher rather than material cues, and b) the reading skills were developed across groups of students.

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One major objective of this program was to teach one group of students a constellation of basic reading skills that culminate in the student demonstrating comprehension in response to material rather than teacher cues.

A second major objective was to organize several basic language skills into a developmental reading format in an effort to delineate an instructional model that is empirically tenable for teaching selected basic reading skills to young severely handicapped students. Characteristics of the instructional model that should be made salient are as follows: First, the model is based upon a "whole word" approach to teaching reading in that students were taught to label words in their entirety, without direct instruction in the use of contextual or phonetic cues. Second, requirements for the performance of specific language skills are cumulative in that the model requires the building and/or combining of basic parts of speech in order for the students to read words, phrases, sentences and finally chart stories. For example, the reading of nouns was taught first. Reading action verbs was then taught followed by the reading of verb-noun phrases. Adjectives were then taught and combined with the nouns to form adjective-noun phrases. Three basic components (verbs, nouns and adjectives) were then combined to form simple direct commands. Articles and proper names were added which allowed the formation of complete sentences. All of the basic structural components (words, phrases and sentences) were then combined to form initial chart stories. Finally, more complex skills which required additional verbs, nouns, and for the first time, prepositions were taught and combined with the skills necessary to read the initial chart stories to form new chart stories. Reading of these new chart stories required the performance of one and two component directions.

The chart story format was selected as an approach to expanding words, phrases and sentences into more complex linguistic statements, as the use of a chart story approach has been demonstrated successful in teaching reading to severely handicapped students (Brown, Scheuerman, Cartwright & York, 1973; Huppler, 1972). However, the Huppler and Brown, et al. programs neither reported empirical demonstrations of comprehension, nor did the reading materials direct the students to perform demonstrable actions. Related programs required students to demonstrate comprehension after labeling a word but in response to a teacher provided verbal cue (Brown, et al., 1974; Brown, et al., 1972; Brown & Perlmutter, 1971).

Third, the model requires that the reading skills necessary to complete each program component are empirically verified through criterion measurement.

In an attempt to communicate relevant components of the instructional model as well as the specific reading skills required, a detailed task analysis follows. From an examination of the task analysis, at least the following points should be salient:

1) That the students possessed reasonable vision and imitation skills, and manifested rudimentary speech patterns (1 or 2 word verbal chains) were considered basic prerequisites.

2) The program assumed accumulation in that nouns, verbs, adjectives, articles, proper names and prepositions were taught in isolation and then combined to form phrases, sentences and chart stories.

3) The vocabulary and materials were taken from the local classroom environment in an attempt to base the development of reading skills upon subjectively meaningful sensory and language experiences. However, it is expected that other vocabularies and materials will be substituted in other classroom environments.

4) As a student progressed across parts and phases, increasing reliance was made upon precise visual and auditory memory skills.

5) Each phase required a verifiable indication of comprehension in that a student who can pronounce written words is "word labeling." Word labeling may be necessary, but is certainly not sufficient for reading. Without comprehension one cannot claim reading.

Task Analysis

Phase I: Nouns

Teaching students to label printed words that represent selected objects (e.g., Q: What is this word? A: Wagon) and to demonstrate comprehension of the printed words by touching it in response to a verbal cue (e.g., Touch it).

Part 1 - When presented with an object, students will label the object in response to the verbal cue "What is this?"

Part 2 - When presented a group of objects students will visually discriminate (touch) one object in response to printed and verbal cues (e.g., The teacher presents a word card upon which the word wagon is printed and says, "This is the word wagon. Touch a wagon.").

Part 3 - When presented with a group of objects and with the corresponding word cards in front of the objects, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents a word card and says, "This is the word wagon. Touch another word wagon.").

Part 4 - When presented with words that represent objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents a word card and says, "This is the word wagon. Touch another word wagon.").

Part 5 - When presented with words that represent objects students will visually discriminate words in response to the verbal cue "Touch the word wagon." and will label the word in response to the verbal cue "What is this word?"

Part 6 - When presented with a word that represents an object, students will label that word in response to the verbal cue "What is this word?"

Part 7 - When presented with words that represent objects, students will label the words and demonstrate comprehension by discriminating the objects the words represent.

Phase II: Verbs

Teaching students to label printed words that represent selected actions (e.g., push) and to demonstrate comprehension by performing the actions in response to the verbal cue "Do it."

Part 1 - Students will perform actions in response to verbal cues (e.g., "Show me push.").

Part 2 - When presented with pictures that depict actions, students will visually discriminate (touch) pictures in response to verbal cues (e.g., "Touch the picture of push.").

Part 3 - When presented with a model performing actions, students will label the actions of the model in response to a verbal cue (e.g., "What is (teacher) doing?").

Part 4 - When presented with pictures that represent actions, students will label the action pictures in response to verbal cues (e.g., "What is the boy doing?").

Part 5 - When presented with pictures and corresponding word cards, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push and says, "This is the word push. Touch another word push.").

Part 6 - When presented with word cards that represent actions, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push and says, "This is the word push. Touch another word push.").

Part 7 - When presented with word cards that represent actions, students will visually discriminate word cards in response to verbal cue (e.g., "Touch the word push.") and label the word in response to a verbal cue "What is that word?"

Part 8 - When presented with word cards that represent actions, students will label the word cards in response to the verbal cue "What is this word?"

Part 9 - When presented with word cards that represent actions, students will label the word cards in response to the verbal cue "What is this word?" and then demonstrate comprehension by visually discriminating a picture depicting the action in response to the verbal cue "Touch it."

Part 10 - Students will label printed words that represent actions (e.g., push) and then demonstrate comprehension by performing the actions in response to verbal cues (e.g., "Do it.").

Phase III: Verb-Noun Phrases

Teaching students to label printed words that represent selected verb-noun phrases (e.g., push wagon) and to demonstrate comprehension by performing the actions the phrases describe.

Part 1 - Students will perform actions represented by verb-noun phrases (e.g., push wagon) in response to verbal cues (e.g., "Show me push wagon.").

Part 2 - When presented with models performing actions using objects (e.g., The teacher pushing a wagon.) students will label the actions using verb-noun phrases in response to the cue "What is (teacher) doing?").

Part 3 - When presented with pictures depicting actions, students will visually discriminate (touch) an action picture in response to printed and verbal cues (e.g., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch push wagon.").

Part 4 - When presented with pictures that represent verb-noun phrases, students will label the actions in response to the verbal cue "What is the boy/girl doing?"

Part 5 - When presented with pictures and corresponding word cards in front of the pictures, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch the words push wagon.").

Part 6 - When presented with word cards that represent verb-noun phrases, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch the words push wagon.").

Part 7 - When presented with word cards that represent verb-noun phrases, students will visually discriminate one word card in response to the verbal cue "Touch the words push wagon." and will then label the words in response to the verbal cue "What are these words?"

Part 8 - When presented with word cards that represent verb-noun phrases, students will label the word cards in response to the verbal cue "What are these words?"

Part 9 - When presented with word cards that represent verb-noun phrases, students will label the word cards in response to the verbal cue "What are these words?" and then demonstrate comprehension by touching a picture depicting the action described by the verb-noun phrase.

Part 10 - When presented with word cards that represent verb-noun phrases, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by performing the actions the phrases describe.

Phase IV: Adjectives

Teaching students to label printed words that represent selected adjectives and to demonstrate comprehension of the words by touching the adjectives in pictures.

Part 1 - When presented with objects (e.g., a red wagon) students will describe the object in response to the verbal cue "What color/size is this?" When presented with a picture depicting a color/size, students will describe the picture in response to the verbal cue "What color/size is this?"

Part 2 - When presented with a group of objects, students will visually discriminate (touch) one object (e.g., a red wagon) in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch the color red."). When presented with a picture students will visually discriminate an adjective in that picture in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch the color red.").

Part 3 - When presented with a group of objects and with corresponding word cards in front of the objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch the color word red.").

Part 4 - When presented with words that describe objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch another color word red.").

Part 5 - When presented with words that describe objects, students will visually discriminate words in response to the verbal cue "Touch the color word red." and will label the words in response to the verbal cue "What is this color/size word?"

Part 6 - When presented with words that describe objects, students will label the words in response to the verbal cue "What is this color/size word?"

Part 7 - When presented with words that describe objects, students will label words in response to the verbal cue "What is this color/size word?" and will demonstrate comprehension by touching an object which contains the adjective in response to the verbal cue "Touch it."

Part 8 - When presented with words that describe objects, students will label the words in response to the verbal cues "What is this color/size word?" and will demonstrate comprehension by touching a picture containing the adjective in response to the verbal cue "Touch it."

Phase V: Adjective noun phrases

Teaching students to label printed words that represent selected adjective noun phrases (e.g., red wagon) and to demonstrate comprehension of the printed words by touching pictures of adjective noun phrases.

Part 1 - When presented with objects (e.g., red wagon) and pictures that depict those objects, students will label the objects and pictures with adjective noun phrases in response to the verbal cue "What is this?"

Part 2 - When presented with objects and pictures, students will visually discriminate (touch) objects or pictures in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch a red wagon.").

Part 3 - When presented with pictures and with corresponding printed words in front of the pictures, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch the words red wagon.").

Part 4 - When presented with word cards, students will visually discriminate appropriate word cards in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch the words red wagon.").

Part 5 - When presented with word cards containing adjective noun phrases, students will visually discriminate a word card in response to the verbal cue "Touch the words red wagon" and students will label the words in response to the verbal cue "What are those words?"

Part 6 - When presented with word cards containing adjective noun phrases, students will label the words in response to the verbal cue "What are these words?"

Part 7 - When presented with word cards containing adjective noun phrases, students will label the words in response to the verbal cue "What are these words?" and will demonstrate comprehension by touching an object represented by the adjective noun phrase in response to the verbal cue "Touch it."

Part 8 - When presented with word cards containing adjective noun phrases, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching a picture representing the adjective noun phrase in response to the verbal cue "Touch it."

Phase VI: Verb adjective noun commands

Teaching students to label printed words that represent selected direct commands (e.g., bounce red ball) and to demonstrate comprehension of those printed words by performing the directed actions.

Part 1 - When presented with word cards that represent direct commands, students will visually discriminate (touch) word cards in response to printed and verbal cues (e.g., The teacher presents the word card push red wagon and says, "These are words push red wagon. Touch the words push red wagon.").

Part 2 - When presented with word cards that contain direct commands, students will visually discriminate word cards in response to a verbal cue (e.g., "Touch the words push red wagon.") and will label the words in response to the verbal cue "What are those words?"

Part 3 - When presented with word cards that contain direct commands, students will label the words in response to the verbal cue "What are these words?"

Part 4 - When presented with word cards that contain direct commands, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching a picture that represents the direct command in response to the verbal cue "Touch a picture of it."

Part 5 - When presented with word cards that contain direct commands, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by performing appropriate actions in response to the verbal cue "Show me" or "Do it."

Phase VII: Articles

Teaching students to label words that contain selected articles (e.g., a, an, the) and to demonstrate understanding that if an article precedes a noun, the meaning of the noun is not effected (i.e., "Touch a ball." communicates the same information as "Touch ball.").

Part 1 - When presented with word cards that contain articles, students will visually discriminate (touch) word cards in response to printed and verbal cues (e.g., The teacher presents the word a and says, "This is the word a. Touch the word a.") and will label articles in response to the cue "What is this word?"

Part 2 - When presented with word cards that contain articles, students will visually discriminate words in response to the verbal cue "Touch the word (a)" and will label words in response to the verbal cue "What is this word?"

Part 3 - When presented with word cards that contain articles, students will label the words in response to the verbal cue "What is this word?"

Part 4 - When presented with word cards that contain noun phrases (e.g., a ball), students will label the words in response to the verbal cue "What are these words?"

Part 5 - When presented with word cards that contain adjective phrases (e.g., a red ball), students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching the object referred to in the phrase in response to the verbal cue "Touch it."

Part 6 - When presented with word cards that contain adjective phrases (e.g., a red ball), students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching the object referred to in the phrase in response to the verbal cue "Touch it."

Part 7 - When presented with word cards that contain direct commands (e.g., Bounce a/an/the/orange ball.), students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by selecting the object and performing the action.

Phase VIII: Proper names

Teaching students to label printed words that represent selected proper names (e.g., Tom) and to demonstrate comprehension of the proper names by touching individuals of those names.

Part 1 - When presented with a group of classmates, students will visually discriminate (touch) self and classmates in response to verbal name cues (e.g., "Touch Tom.").

Part 2 - When presented with a classmate, students will make a proper name response in response to the verbal cue "Who is this?"

Part 3 - When presented with word cards that contain proper names, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents a word card and says, "This is the word Tom. Touch another word Tom.") and will label the word in response to the cue "What is this word?"

Part 4 - When presented with word cards that contain proper names, students will label the words in response to the verbal cue "What is this word?"

Part 5 - When presented with word cards that contain proper names, students will label the words in response to the verbal cue "What is this word?" and will demonstrate comprehension by touching the appropriate person.

Phase IX:

Teaching students to label printed words in selected sentences (e.g., proper name, verb, article, adjective, noun, or "Tom, bounce the red ball.") and to demonstrate comprehension by performing the actions directed by the sentences.

Part 1 - When presented with sentence cards, students will visually discriminate (touch) specific sentences in response to visual and verbal cues (e.g., The teacher presents a sentence card and says, "This sentence is Nancy, push the red wagon. Touch another sentence like it.").

Part 2 - When presented with sentence cards, students will visually discriminate specific sentences in response to the verbal cue "Touch the sentence Nancy, push the red wagon." and label the sentence in response to the verbal cue "What is this sentence?"

Part 3 - When presented with sentence cards, students will label the sentences in response to the verbal cue "Read this sentence."

Part 4 - When presented with sentence cards, students will label the sentences and will demonstrate comprehension by performing the actions directed by the sentences.

Phase X: Chart Stories

Teaching students to label chart stories and to demonstrate comprehension by performing the actions directed by the stories.

Part 1 - When presented with a chart story containing phrases and sentences, students will label the words in the chart story and demonstrate comprehension by performing the actions directed by the stories in response to the verbal cues "Read the story. Do what the story tells you to do."

Phase XI: Sentences with prepositional phrases

Teaching students to label selected printed sentences which contain selected prepositional phrases (e.g., proper name verb article noun preposition article noun, or Don, put the ball in the cup.) and demonstrate comprehension by performing the actions directed by the sentences.

Part 1 - When presented with verbal sentences which contain prepositional phrases, students will perform the actions directed by the verbal sentences (e.g., "Don, put the ball in the cup.").

Part 2 - When presented with word cards that contain prepositions and verbs, students will label those words in response to the verbal cue "What is this word?"[2]

Part 3 - When presented with sentence cards that contain prepositional phrases, students will label the sentences in response to the verbal cue "Read the sentences."

Part 4 - When presented with sentences which contain prepositional phrases (e.g., Don, put the red ball in the wagon.), students will label and demonstrate comprehension by performing the actions directed by the sentences.

Phase XII: Chart stories with prepositional phrases

Teaching students to label chart stories which contain sentences with prepositional phrases and to demonstrate comprehension by performing the actions directed by the stories.

Part 1 - When presented a chart story with sentences containing prepositional phrases, students will label the words in the chart story and demonstrate comprehension by performing the action directed by the story in response to the verbal cue "Read the story. Do what the story tells you to do."

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[2] The verb is is introduced here along with regular action verbs.

METHOD

Students (Ss)

The 4 Ss (S_1, S_2, S_3 and S_4) ranged in chronological age from 5 to 11 years ($\bar{X}$ = 6.7) in I.Q. scores from 32 to 79 ($\bar{X}$ = 52) and in years in school (private and public) from 2.5 to 4 ($\bar{X}$ = 2.63). Ss also received such medical diagnoses as "Down's Syndrome," "severely retarded," "serious inoperable heart defect," "obstruction of the esophagus," "mild to moderate retardation." Ss were enrolled in the Madison Public Schools in a self-contained yet semi-integrated program for trainable level retarded students in a regular elementary school.

S_1 was a 5-year-old boy who obtained an I.Q. score of 79 on the Stanford Binet Test of Intelligence and was labeled "mild to moderately retarded." S's school records contain the medical descriptions "Down's Syndrome," "serious inoperable heart defect (one ventricle is missing)" and "obstruction of his esophagus." Prior to public school placement, he attended a day care center for young handicapped children. During the school years teachers have described S_1 as follows:

> "He has difficulty attending to a task." -- "He will follow directions, but tends to act out in front of other children." -- "Bothers as a means of getting attention. This is an inappropriate behavior and he gains much attention for his inappropriate behaviors."

S_2, a 5-year-old male, obtained an I.Q. score of 65 on the Stanford Binet and was labeled "moderately retarded." According to records in his cumulative folder he was described as a "lazy, stubborn, dependent Down's Syndrome child, who tries to manipulate others." -- "He is reserved and tends to play alone."

S_3 was an 11 year and 11 month old Down's Syndrome male, who wears short leg braces. He was classified as "severely retarded" and obtained an I.Q. score of 32 on the Stanford Binet. According to records in his cumulative folder S_3 was described as: "a responsive, imitative boy, who is subject to displays of temper," -- "exhibits inappropriate self-mutilating behaviors in the classroom." -- "will say 'no' when he is asked to perform even though he really wants to be a part of the group."

S_4 was a 6 year and 6 month old male who obtained an I.Q. score of 33 on the Stanford Binet. According to records in his cumulative folder S_4 was reported to lack social skills: "S_4 does not interact well with others." -- "he can be stubborn, withdrawn and non-compliant." Recent vision exams provided information that S_4 "was extremely near sighted in his left eye, should not be exposed to extreme bright light and is subject to double vision."

Instructional Materials and Arrangement

Phase I: Teaching students to label printed words that represent selected objects (e.g., Q: What is this word? A: Wagon) and to demonstrate comprehension of the printed words by touching it in response to a verbal cue (e.g., Touch it).

Part 1 - When presented with an object, students will label the object in response to the verbal cue "What is this?"

Materials

The following materials were used in Phase I, Part 1: Ball, wagon, car, bus, balloon; and appropriate data sheets.[3]

Arrangement

*S*s were seated at a large table in the front of the room. *T* sat directly in front of *S*s.

Part 2 - *When presented a group of objects students will visually discriminate (touch) one object in response to printed and verbal cues (e.g., The teacher presents a word card upon which the word wagon is printed and says, "This is the word wagon. Touch a wagon.")*.

Materials

The following materials were used in Phase I, Part 2: Ball, wagon, car, bus, balloon and five 3" x 5" corresponding word cards; and appropriate data sheets.

Arrangement

*S*s were seated at a large table in front of *T*. *T* placed the five objects on the table, one in front of each *S*.

Part 3 - *When presented with a group of objects and with the corresponding word cards in front of the objects, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents a word card and says, "This is the word wagon. Touch another word wagon.")*.

Materials

The following materials were used in Phase I, Part 3: Ball, wagon, car, bus, balloon, two sets of corresponding printed word cards; and appropriate data sheets.

Arrangement

*S*s were seated at a large table in the front of the room directly in front of *T*. *T* placed the five objects on the table, one in front of each *S*. One corresponding word card was placed in front of each object.

Part 4 - *When presented with words that represent objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents a word card and says, "This is the word wagon. Touch another word wagon.")*.

Materials

The following materials were used in Phase I, Part 4: Two sets of printed word cards containing the words car, balloon, ball, bus, wagon; and appropriate data sheets.

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[3] Examples of data sheets are presented in Appendix B.

Arrangement

Ss were seated at a table facing T. The five word cards from one set were placed in front of an S. T then presented one of the words from the other set and began instruction.

Part 5 - When presented with words that represent objects students will visually discriminate words in response to the verbal cue, "Touch the word wagon." and will label the word in response to the verbal cue "What is this word?"

Materials

The following materials were used in Phase I, Part 5: One set of printed word cards containing the words ball, bus, balloon, car, wagon; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. T placed the five word cards in front of S_1 and initiated instruction.

Part 6 - When presented with a word that represents an object, students will label that word in response to the verbal cue "What is this word?"

Materials

The following materials were used in Phase I, Part 6: One set of printed word cards containing the words ball, bus, car, balloon, wagon; and appropriate data sheets.

Arrangement

Ss were seated at a table in front of T.

Part 7 - When presented with words that represent objects, students will label the words and demonstrate comprehension by discriminating the objects the words represent.

Materials

The following materials were used in Phase I, Part 7: One set of printed word cards containing the words ball, bus, balloon, wagon; and appropriate data sheets.

Arrangement

Ss were seated in chairs directly facing T. The five objects (ball, car, bus, wagon, balloon) were placed on the floor next to T.

Phase II: Teaching students to label printed words that represent selected actions (e.g., push) and to demonstrate comprehension by performing the actions in response to the verbal cue "Do it."

Part 1 - Students will perform actions in response to verbal cues (e.g., "Show me push.").

Materials

The following materials were used in Phase II, Part 1: Ball, car, bus, wagon, balloon, and appropriate data sheets.

Arrangement

Ss were seated at a large table in the front of the room. The materials were placed in the center of the room, the Action Area.

Part 2 - When presented with pictures that depict actions, students will visually discriminate (touch) pictures in response to verbal cues (e.g., "Touch the picture of push.").

Materials

The following materials were used in Phase II, Part 2: Five pictures of children performing the actions-bounce, go, fly, ride, push; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. T placed the five pictures of the action words on the table in front of S_1.

Part 3 - When presented with a model performing actions, students will label the actions of the model in response to a verbal cue (e.g., "What is (teacher) doing?").

Materials

The following materials were used in Phase II, Part 3: A person (i.e., teacher aide) to perform the actions using the bus, the car, the wagon, the ball, the balloon; and appropriate data sheets.

Arrangement

The materials were placed in the Action Area. Ss were seated at the table in front of T.

Part 4 - When presented with pictures that represent actions, students will label the action pictures in response to verbal cues (e.g., "What is the boy doing?").

Materials

The following materials were used in Phase II, Part 4: Five teacher prepared pictures of children performing the actions-push, go, fly, ride, bounce; five objects - wagon, car, balloon, bus, ball; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. The pictures were presented on the chartboard to S_3 and S_4, and on the table to S_1 and S_2.

Part 5 - When presented with pictures and corresponding word cards, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push and says, "This is the word push. Touch another word push.").

Materials

The following materials were used in Phase II, Part 5: Pictures of actions-go, fly, ride, bounce, push; ten 3" x 5" corresponding word cards; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. T placed the five pictures, each with a corresponding word card attached to the upper left hand corner, in front of S_1.

Part 6 - When presented with word cards that represent actions, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card "push" and says, "This is the word push. Touch another word push.").

Materials

The following materials were used in Phase II, Part 6: Ten 3" x 5" word cards containing words go, bounce, fly, ride, push; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. T placed one set of word cards on the chartboard. T presented a word card from the second set.

Part 7 - When presented with word cards that represent actions, students will visually discriminate word cards in response to verbal cue (e.g., "Touch the word push.") and label the word in response to a verbal cue "What is that word?"

Materials

The following materials were used in Phase II, Part 7: One set of 3" x 5" word cards containing the action words-go, bounce, ride, fly, push; and appropriate data sheets.

Arrangement

Ss were seated at a large table in the front of the room in front of T. T placed the word cards on the chartboard or on the table.

Part 8 - When presented with word cards that represent actions, students will label the word cards in response to the verbal cue "What is this word?"

Materials

The following materials were used in Phase II, Part 8: 3 x 5 word cards containing the action words-go, bounce, ride, fly, push; and appropriate data sheets.

Arrangement

Ss sat at a large table in front of T. T presented the word cards to each S by holding it at eye level.

Part 9 - When presented with word cards that represent actions, students will label the word cards in response to the verbal cue "What is this word?" and then demonstrate comprehension by visually discriminating a picture depicting the action in response to the verbal cue "Touch it."

Materials

The following materials were used in Phase II, Part 9: Five 3 x 5 word cards; one set of pictures that represent selected actions-go, bounce, ride, fly, push; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. T placed the five pictures on the chartboard in front of the Ss. T presented a different word card to each student.

Part 10 - Students will label printed words that represent actions (e.g., push) and then demonstrate comprehension by performing the actions in response to verbal cues (e.g., "Do it.").

Materials

The following materials were used in Phase II, Part 10: Five 3 x 5 word cards containing the action words-go, bounce, fly, ride, push; five objects-ball, car, balloon, bus, wagon; and appropriate data sheets.

Arrangement

The objects were placed in the Action Area in the center of the room. Ss were seated at a large table in front of T. T presented a different word card to each S.

Phase III: Teaching students to label printed words that represent selected verb-noun phrases (e.g., push wagon) and to demonstrate comprehension by performing the actions the phrases describe.

Part 1 - Students will perform actions represented by verb-noun phrases (e.g., push wagon) in response to verbal cues (e.g., "Show me push wagon.").

Materials

The following materials were used in Phase III, Part 1: A car, a bus, a wagon, a ball, a balloon; and appropriate data sheets.

Arrangement

Ss were seated in front of T. The materials were placed in the Action Area prior to the beginning of instruction.

Part 2 - When presented with models performing actions using objects (e.g., The teacher pushing a wagon.) students will label the actions using verb-noun phrases in response to the cue "What is (teacher) doing?").

Materials

The following materials were used in Phase III, Part 2: A person (i.e., teacher aide) to perform the actions; five objects - ball, wagon, car, bus, balloon; and appropriate data sheets.

Arrangement

Ss were seated at a table in front of T. The materials had been placed in the Action Area prior to instruction.

Part 3 - When presented with pictures depicting actions, students will visually discriminate (touch) an action picture in response to printed and verbal cues (e.g., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch push wagon.").

Materials

The following materials were used in Phase III, Part 3: Eleven picture cards; eleven 3 x 5 printed word cards containing the phrases go car, push car, ride car, go wagon, push wagon, ride wagon, go bus, push bus, ride bus, fly balloon, bounce ball; and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in front of T. T placed one set of 3 pictures on the chartboard.

Part 4 - When presented with pictures that represent verb-noun phrases, students will label the actions in response to the verbal cue "What is the boy/girl doing?"

Materials

The following materials were used in Phase III, Part 4: Eleven teacher prepared picture cards and appropriate data sheets.

Arrangement

Ss were seated at a table in front of T. T presented to Ss one at a time in rotation.

Part 5 - When presented with pictures and corresponding word cards in front of the pictures, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch the words push wagon.").

Materials

The following materials were used in Phase III, Part 5: Eleven teacher prepared picture cards; two sets of eleven corresponding word cards each containing the phrases go car, ride car, push car, go bus, ride bus, push bus, go wagon, ride wagon, push wagon, fly balloon, bounce ball; and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in front of T. T placed (Set 1) three pictures with the corresponding action phrases placed on the left hand corner on the chartboard. T presented another set of word cards and pictures to each S.

Part 6 - When presented with word cards that represent verb-noun phrases, students will visually discriminate word cards in response to printed and verbal cues (i.e., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch the words push wagon.").

Materials

The following materials were used in Phase III, Part 6: Two sets of word cards containing eleven action phrases push car, go car, ride car, push bus, go bus, ride bus, push wagon, ride wagon, go wagon, fly balloon, bounce ball; and appropriate data sheets.

Arrangement

Ss were seated at a table in front of T. T placed (Set 1) three word cards on the table in front of each S. T presented a word card from the second set to each S.

Part 7 - When presented with word cards that represent verb-noun phrases, students will visually discriminate one word card in response to the verbal cue "Touch the words push wagon." and will then label the words in response to the verbal cue "What are these words?"

Materials

The following materials were used in Phase III, Part 7: One set of eleven word cards containing the phrases go car, ride car, push car, go wagon, push wagon, ride wagon, go bus, push bus, ride bus, fly balloon, bounce ball; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. T placed the word cards on the table for S_1 and S_2 and on the chartboard for S_3 and S_4. All sets (1-4) were presented to each S in rotation (i.e., set 1 to S_1, set 2 to S_2, set 3 to S_3 and set 4 to S_4).

Part 8 - When presented with word cards that represent verb-noun phrases, students will label the word cards in response to the verbal cue "What are these words?"

Materials

The following materials were used in Phase III, Part 8: One set of eleven word cards containing the phrases push wagon, go wagon, ride wagon, push bus, go bus, ride bus, push car, go car, ride car, fly balloon, bounce ball; and appropriate data sheets.

Arrangement

Ss were seated at a large table in front of T. T presented the word cards to each S in rotation.

Part 9 - When presented with word cards that represent verb-noun phrases, students will label the word cards in response to the verbal cue "What are these words?" and then demonstrate comprehension by touching a picture depicting the action described by the verb-noun phrase.

Materials

The following materials were used in Phase III, Part 9: One set of eleven word cards; one set of eleven pictures that represent selected action phrases go wagon, go bus, go car, ride wagon, ride bus, ride car, push wagon, push bus, push car, fly balloon, bounce ball; and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in front of T. T placed 6 pictures on the chartboard. T placed one of 6 word cards on the chartboard. T changed the picture and the cards.

Part 10 - When presented with word cards that represent verb-noun phrases, students will label the words in response to the verbal cues "What are these words?" and demonstrate comprehension by performing the actions the phrases describe.

Materials

The following materials were used in Phase III, Part 10: Eleven word cards that contain the selected action phrases; five objects - wagon, car, ball, bus, balloon; and appropriate data sheets.

Arrangement

The objects were placed in the Action Area in the center of the room. Ss were seated at the large table in front of T. T presented a different word card to each S, rotating until each S had been presented 11 word cards.

Phase IV: Teaching students to label printed words that represent selected adjectives and to demonstrate comprehension of the words by touching the adjectives in pictures.

Part 1 - When presented with objects (e.g., a red wagon) students will describe the object in response to the verbal cue "What color/size is this?" When presented with a picture depicting a color/size, students will describe the picture in response to the verbal cue "What color/size is this?"

Materials

The following materials were used in Phase IV, Part 1: In part (a) eight objects that represent adjectives, red circle, green car, orange marker, blue car, little ball, big ball, purple car, yellow cup; eight colored and sized balloons; in part (b) 2 sized and 6 colored pieces of paper; twelve pictures of colors and sizes; and appropriate data sheets.

Arrangement

Ss were seated at a large table in the front of the room in front of T. The colored and sized objects were placed on the table in front of Ss in mixed order.

Part 2 - *When presented with a group of objects, students will visually discriminate (touch) one object (e.g., a red wagon) in response to printed and verbal cues (e.g., The teacher presents the word card red and says "This is the color word red. Touch the color red."). When presented with a picture students will visually discriminate an adjective in that picture in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch the color red.")*.

Materials

The following materials were used in Phase IV, Part 2: In part (a) eight objects that represent adjectives, *red* circle, *green* car, *orange* marker, *blue* car, *little* ball, *big* ball, *purple* car, *yellow* cup and eight colored and sized balloons; in part (b) 2 sized and 6 colored pieces of paper; pictures of colors and sizes; 8 3 x 5 cards containing the words red, green, blue, orange, yellow, big, purple, little; and appropriate data sheets.

Arrangement

*S*s were seated at a large table in the front of the room in front of *T*. The colored and sized objects or colored and sized pictures were placed in front of *S*s in a mixed order. *T* presented one word card at a time in rotation to each *S*.

Part 3 - *When presented with a group of objects and with corresponding word cards in front of the objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch the color word red.")*.

Materials

The following materials were used in Phase IV, Part 3: Eight objects that represented selected adjectives, *big*, *little*, *red*, *yellow*, *blue*, *orange*, *green*, *purple*; 2 sets of eight 3 x 5 cards containing the eight selected color and size words; and appropriate data sheets.

Arrangement

*S*s were seated at a table in the front of the room in front of *T*. The eight objects with the corresponding word card were placed on the table in front of *S*s. *T* presented a word card to S_1.

Part 4 - *When presented with words that describe objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch another color word red.")*.

Materials

The following materials were used in Phase IV, Part 4: Two sets of 3 x 5 cards containing eight selected color and size words; and appropriate data sheets.

Arrangement

Ss were seated at the table in the front of the room. T placed one set of the word cards on the table in front of S_1 and S_2. T presented one word card to S_1. Ss 3 and 4 were presented the word cards on the chartboard.

Part 5 - When presented with words that describe objects, students will visually discriminate words in response to the verbal cue "Touch the color word red." and will label the words in response to the verbal cue "What is this color/size word?"

Materials

The materials used in Phase IV, Part 5 were as follows: One set of 3 x 5 word cards containing eight selected color and size words; and appropriate data sheets.

Arrangement

Ss were seated at the large table in front of T. T placed the word cards on the table in front of S_1 and S_2. T presented the verbal cue. T presented the word cards to Ss 3 and 4 on the chartboard.

Part 6 - When presented with words that describe objects, students will label the words in response to the verbal cue "What is this color/size word?"

Materials

The following materials were used in Phase IV, Part 6: Eight 3 x 5 word cards containing color and size words; and appropriate data sheets.

Arrangement

Ss were seated at the table in front of T. T presented the word cards to the Ss in rotation.

Part 7 - When presented with words that describe objects, students will label words in response to the verbal cue "What is this color/size word?" and will demonstrate comprehension by touching an object which contains the adjective in response to the verbal cue "Touch it."

Materials

The following materials were used in Phase IV, Part 7: Eight 3 x 5 word cards that contain selected color and size words; eight sets of objects-three objects in each set (e.g., red ball, blue ball, big ball); and appropriate data sheets.

Arrangement

Ss were seated at a table in front of *T*. *T* placed 3 objects in front of $\underline{S}_1$. *T* presented a word card to $\underline{S}_1$.

Part 8 - *When presented with words that describe objects, students will label the words in response to the verbal cues "What is this color/size word?" and will demonstrate comprehension by touching a picture containing the adjective in response to the verbal cue "Touch it."*

Materials

The following materials were used in Phase IV, Part 8: Eight 3 x 5 word cards containing selected color and size words; 12 picture cards; and appropriate data sheets.

Arrangement

Ss were seated at a table in front of *T* in the *Reading Corner*. One corner of the room, containing a bookcase, table, five chairs, a chartboard and a chalkboard, was designated as the *Reading Corner*. One set of picture cards was placed on the chartboard. *T* placed one word card on the board.

Phase V: *Teaching students to label printed words that represent selected adjective noun phrases (e.g., red ball) and to demonstrate comprehension of the printed words by touching pictures of adjective noun phrases*.

Part 1 - *When presented with objects (e.g., red wagon) and pictures that depict those objects, students will label the objects and pictures with adjective noun phrases in response to the verbal cue "What is this?"*

Materials

The following materials were used in Phase V, Part 1: Ten objects that could be described using an adjective noun phrase; one set of pictures that could be described using an adjective noun phrase; and appropriate data sheets.

Arrangement

Ss sat in the *Reading Corner* at a table in front of *T*. *T* placed ten objects or pictures on the table in front of *Ss*, (red ball, purple car, green balloon, yellow bus, big bus, red wagon, orange balloon, little ball, blue car, big ball).

Part 2 - When presented with objects and pictures, students will visually discriminate (touch) objects or pictures in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch a red wagon.").

Materials

The following materials were utilized in Phase V, Part 2: One set of ten objects and one set of pictures that could be described using the above adjective noun phrases; and appropriate data sheets.

Arrangement

Ss sat in the Reading Corner in front of T. T placed the ten objects or pictures on the table in front of S_1. T presented the words to Ss in rotation.

Part 3 - When presented with pictures and with corresponding printed words in front of the pictures, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch the words red wagon.").

Materials

The following materials were utilized in Phase V, Part 3: Pictures that represent the ten adjectives; two sets of 3 x 5 cards that contain adjective noun phrases; and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in the Reading Corner. T placed three pictures, with the corresponding word card in the left hand corner of the picture, on the chartboard. T placed another word card on the top of the chartboard.

Part 4 - When presented with word cards, students will visually discriminate appropriate word cards in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch the words red wagon.").

Materials

The following materials were used in Phase V, Part 4: Two sets of 3 x 5 word cards that contain 10 adjective noun phrases;and appropriate data sheets.

Arrangement

Ss sat in front of the chartboard in the Reading Corner. T sat to the side of the chartboard and placed five word cards on the chartboard. T presented the word cards in rotation.

Part 5 - When presented with word cards containing adjective noun phrases, students will visually discriminate a word card in response to the verbal cue "Touch the words red wagon" and students will label the words in response to the verbal cue "What are those words?"

Materials

The following materials were used in Phase V, Part 5: Ten 3 x 5 cards that contain ten adjective noun phrases, and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in the Reading Corner. T placed five word cards on the chartboard.

Part 6 - When presented with word cards containing adjective noun phrases, students will label the words in response to the verbal cue "What are these words?"

Materials

The following materials were used in Phase V, Part 6: One set of 26 word cards that contain adjective noun phrases, and appropriate data sheets.

Arrangement

Ss were seated at a table in the Reading Corner. T presented 26 word cards to Ss in rotation.

Part 7 - When presented with word cards containing adjective noun phrases, students will label the words in response to the verbal cue "What are these words?" and will demonstrate comprehension by touching an object represented by the adjective noun phrase, in response to the verbal cue "Touch it."

Materials

The following materials were used in Phase V, Part 7: 26 printed word cards and 30 objects that could be described using adjective noun phrases; and appropriate data sheets.

Arrangement

Ss were seated at a table in the Reading Corner in front of T. T placed several objects on the table in front of Ss. T presented the word cards in rotation. T changed the objects and the word cards five times for one trial of 26 word cards.

Part 8 - When presented with word cards containing adjective noun phrases, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching a picture representing the adjective noun phrase in response to the verbal cue "Touch it."

Materials

The materials utilized in Phase V, Part 8 were as follows: 26 word cards and 12 picture cards of 30 objects that could be described using adjective noun phrases, and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in the Reading Corner. T placed three pictures on the chartboard and placed one word card under the picture cards. T varied the pictures and the word cues with each S until 2 trials of 26 word cards had been presented.

Phase VI: Teaching students to label printed words that represent selected direct commands (e.g., push red wagon) and to demonstrate comprehension of those printed words by performing the directed actions.

Part 1 - When presented with word cards that represent direct commands, students will visually discriminate (touch) word cards in response to printed and verbal cues (e.g., The teacher presents the word card push red wagon and says, "These are words push red wagon. Touch the words push red wagon.").

Materials

The following materials were used in Phase VI, Part 1: Two sets of 3 x 5 cards that represent 10 direct commands, push red wagon, push yellow bus, bounce big ball, ride blue car, fly orange balloon, ride yellow bus, bounce little ball, go blue car, fly green balloon, ride red wagon; and appropriate data sheets.

Arrangement

The materials were presented in the Reading Corner. The 10 cards were divided into two groups of 5. One set was placed on the chartboard. T presented a like set to S_1.

Part 2 - When presented with word cards that contain direct commands, students will visually discriminate word cards in response to a verbal cue (e.g., "Touch the words push red wagon.") and will label the words in response to the verbal cue "What are those words?"

Materials

The following materials were used in Phase VI, Part 2: 10 word cards that contain printed direct commands, and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in the Reading Corner. T placed the 10 word cards on the chartboard in two sets of 5 each.

Part 3 - When presented with word cards that contain direct commands, students will label the words in response to the verbal cue "What are these words?"

Materials

The materials used in Phase VI, Part 3 were as follows: 10 word cards that represent selected direct commands, and appropriate data sheets.

Arrangement

Ss were seated at the chartboard in the Reading Corner. T placed the 10 word cards on the chartboard or presented the word cards in rotation to each S.

Part 4 - When presented with word cards that contain direct commands, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching a picture that represents the direct command in response to the verbal cue "Touch a picture of it."

Materials

The following materials were utilized in Phase VI, Part 4: 11 3 x 5 word cards and one set of 10 pictures that represent selected direct commands, and appropriate data sheets.

Arrangement

Ss sat at the table in front of T in the Reading Corner. T placed 3 pictures, that represent one set of 3 different verb actions using the same object, on the chartboard (e.g., push red wagon, go red wagon, ride red wagon).

Part 5 - When presented with word cards that contain direct commands, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by performing appropriate actions in response to the verbal cue "Show me" or "Do it."

Materials

The following materials were used in Phase VI, Part 5: 10 printed word cards; 15 objects that could be used to perform the actions directed by the 10 commands; and appropriate data sheets.

Arrangement

Ss were seated in the Reading Corner and the objects were placed on the floor and on a table in the Action Area. T presented the word cards to each S in rotation.

Phase VII: Teaching students to label words that contain selected articles (e.g., a, an, the) and to demonstrate understanding that if an article precedes a noun, the meaning of the noun is not effected (i.e., "Touch a ball." communicates the same information as "Touch ball.").

Part 1 - When presented with word cards that contain articles, students will visually discriminate (touch) word cards in response to printed and verbal cues (e.g., The teacher presents the word a and says "This is the word a. Touch the word a.") and will label articles in response to the cue "What is this word?"

Materials

The following materials were used in Phase VII, Part 1: Two sets of 3 x 5 word cards that represent articles a, an, the, and; and appropriate data sheets.

Arrangement

Ss were seated at the table in the Reading Corner. The four word cards were placed on the table in front of Ss. T presented the second set in rotation to Ss.

Part 2 - When presented with word cards that contain articles, students will visually discriminate words in response to the verbal cue "Touch the word (a)" and will label words in response to the verbal cue "What is this word?"

Materials

The following materials were used in Phase VII, Part 2: Four cards that contain the words a, an, the, and; and appropriate data sheets.

Arrangement

Ss were seated at the table in the Reading Corner. T placed the four word cards on the table.

Part 3 - When presented with word cards that contain articles, students will label the words in response to the verbal cue "What is this word?"

Materials

The following materials were used in Phase VII, Part 3: 4 word cards, a, an, the, and; and appropriate data sheets.

Arrangement

Ss were seated at the table in the Reading Corner. T presented the word cards in rotation.

Part 4 - When presented with word cards that contain noun phrases (e.g., a ball) students will label the words in response to the verbal cue "What are these words?"

Materials

The following materials were used in Phase VII, Part 4: Ten word cards that represent articles paired with nouns, and appropriate data sheets.

Arrangement

Ss were seated in the Reading Corner. T presented the pictures on the chartboard or on the table.

Part 5 - When presented with word cards that contain adjective phrases (e.g., a red ball) students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching the object referred to in the phrase in response to the verbal cue "Touch it."

Materials

The following materials were used in Phase VII, Part 5: Ten word cards that represent adjective phrases: a bus, a ball, a car, a balloon, a wagon, the ball, the car, the balloon, the wagon, the bus; and appropriate data sheets.

Arrangement

Ss were seated in the Reading Corner. T placed the word cards on the table or on the chartboard. T placed several objects on the table in front of Ss. T presented a word card to each S.

Part 6 - When presented with word cards that contain adjective phrases (e.g., a red ball) students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching the object referred to in the phrase in response to the verbal cue "Touch it."

Materials

The following materials were used in Phase VII, Part 6: 12 3 x 5 word cards that represent adjective noun phrases; 12 sets of objects, three objects in each set; and appropriate data sheets.

Arrangement

Ss were seated at a table in front of the chartboard in the Reading Corner. T placed one word card on the chartboard. T placed 5 pictures on the chartboard.

Part 7 - When presented with word cards that contain direct commands (e.g., Bounce a/an/the orange ball.) students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by selecting the object and performing the action.

Materials

The following materials were used in Phase VII, Part 7: Ten word cards that contain direct command; twenty objects to use to demonstrate comprehension of the sentence and appropriate data sheets.

Arrangement

Ss were seated in the Reading Corner. T placed the word cards on the chartboard. T placed a set of objects on the table in front of Ss. T pointed to one word card.

Phase VIII: Teaching students to label printed words that represent selected proper names (e.g., Tom) and to demonstrate comprehension of the proper names by touching individuals of those names.

Part 1 - When presented with a group of classmates, students will visually discriminate (touch) self and classmates in response to verbal name cues (e.g., "Touch Tom.").

Materials

The following materials were used in Phase VIII, Part 1: 4 Ss, a teacher aide, and appropriate data sheets.

Arrangement

S_1 was seated next to T in the back of the room. The students and one teacher aide stood in a line in the back of the room. T gave the verbal direction to S_1.

Part 2 - When presented with a classmate, students will make a proper name response in response to the verbal cue "Who is this?"

Materials and Arrangement

The same materials and the same instructional arrangement for Phase VIII, Part 1 were used in Phase VIII, Part 2.

Part 3 - When presented with word cards that contain proper names, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents a word card and says "This is the word Tom. Touch another word Tom.") and will label the word in response to the cue "What is this word?"

Materials

The following materials were used in Phase VIII, Part 3: Eight proper name word cards, four students, and appropriate data sheets.

Arrangement

Ss were seated at a table in the front of the room. T placed one set of printed word cards on the table.

Part 4 - When presented with word cards that contain proper names, students will label the words in response to the verbal cue "What is this word?"

Materials

The following materials were used in Phase VIII, Part 4: Four proper name word cards and appropriate data sheets.

Arrangement

Ss were seated in chairs in front of T in the back of the room. T presented the word cards one by one to each S in rotation.

Part 5 - When presented with sentence cards, students will label the sentences and will demonstrate comprehension by performing the actions directed by the sentences.

Materials

The following instructional materials were used in Phase VIII, Part 5: Four proper name word cards; the students; one teacher aide; and appropriate data sheets.

Arrangement

The materials were used in the same instructional arrangement as Phase VIII, Part 2. The printed word cards were presented to each S in rotation.

Phase IX: Teaching students to label printed words in selected sentences (e.g., proper name, verb, article, adjective, noun or "Tom, bounce the red ball.") and to demonstrate comprehension by performing the actions directed by the sentences.

Part 1 - When presented with sentence cards, students will visually discriminate (touch) specific sentences in response to visual and verbal cues (e.g., The teacher presents a sentence card and says, "This sentence is Nancy, push the red wagon. Touch another sentence like it.").

Materials

The following instructional materials were used in Phase IX, Part 1: Two sets of eleven sentences that represent selected direct commands, and appropriate data sheets.

Sentences:

Don, push the red wagon.
Don, fly an orange balloon.
Don, ride the yellow bus.
Don, push the purple car.
Don, bounce the little ball.
Don, go bounce the big red ball.
Don, fly the green balloon.
Don, ride the red wagon.
Don, go push the red wagon.
Don, ride the blue car.
Don, push the big yellow bus.

Arrangement

Ss were seated in the *Reading Corner*. *T* placed five sentences on the chartboard. *T* presented a duplicate of one of the sentences and used the cues stated in Part 1.

Part 2 - When presented with sentence cards, students will visually discriminate specific sentences in response to the verbal cue "Touch the sentence Nancy, push the red wagon." and label the sentence in response to the verbal cue "Read that sentence."

Materials

The following materials were used in Phase IX, Part 2: Eleven sentences that represent selected direct commands, and appropriate data sheets.

Arrangement

The materials were presented in the same manner as in Phase IX, Part 1.

Part 3 - When presented with sentence cards, students will label the sentences in response to the verbal cue "Read this sentence."

Materials

The following materials were used in Phase IX, Part 3: Eleven printed sentences that represent selected direct commands, and appropriate data sheets.

Arrangement

The same instructional arrangement that was used in Phase IX, Part 2 was used in Phase IX, Part 3.

Part 4 - When presented with sentence cards, students will label the sentences and will demonstrate comprehension by performing the actions directed by the sentences.

Materials

The following materials were used in Phase IX, Part 3: Eleven sentences that represent selected direct commands; a set of 28 objects from which Ss could select to demonstrate comprehension of the sentences; and appropriate data sheets.

Arrangement

The sentences were presented to Ss in the Reading Corner. Ss could select materials from the table or the floor and demonstrate comprehension by performing the action in the Action Area.

Phase X: Teaching students to label chart stories and to demonstrate comprehension by performing the actions directed by the stories.

Part 1 - When presented with a chart story containing phrases and sentences, students will label the words in the chart story and demonstrate comprehension by performing the actions directed by the stories in response to the verbal cues "Read the story. Do what the story tells you to do."

Materials

The following materials were used in Phase X, Part 1: Seven different chart stories; fifteen objects placed in the Action Area; and appropriate data sheets.

Chart Stories

Chart Story 1 - The Balloon
The orange balloon.
The green and yellow balloon.
Fly, fly, fly.
Ron, fly the orange balloon.

Chart Story 2 - A Car
A green car.
A purple car.
Go little purple car.
Go little green car.
Go Don, push the little purple car.

Chart Story 3 - The Ball
The blue ball.
The little blue ball.
Bounce, bounce little ball.
Mary, bounce the little blue ball.

Chart Story 4 - Go
Little yellow car.
Big yellow bus.
Go little car. Go big bus.
Go Ron, push the big yellow bus.

Chart Story 5 - A Ball
A big ball.
A little ball.
Bounce the big ball.
Bounce the little ball.
Roger, bounce the big red ball.

Chart Story 6 - The Ride
The bus.
The big bus.
The big yellow bus.
Go big yellow bus.
Go Pete, ride the big yellow bus.

Chart Story 7 - The Wagon
The big wagon.
The big red wagon.
Ride the red wagon.
Push the red wagon.
Nancy, push the big and red wagon.

Arrangement

Ss were seated in the Reading Corner next to the chartboard. Ss were required to label the words in the chart story, select an object, and perform the action in the Action Area.

Phase XI: Teaching students to label selected printed sentences which contain selected prepositional phrases (e.g., proper name verb article noun preposition article noun, or Don, put the ball in the cup.) and demonstrate comprehension by performing the actions directed by the sentences.

Part 1 - When presented with verbal sentences which contain prepositional phrases, students will perform the actions directed by the verbal sentences (e.g., "Don, put the ball in the cup.").

Materials

The following materials were used in Phase XI, Part 1: Four cups, four little balls, and appropriate data sheets.

Arrangement

T presented the materials to Ss at the table in the Reading Corner.

Part 2 - When presented with word cards that contain prepositions and verbs, students will label those words in response to the verbal cue "What is this word?"[4]

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[4] The verb is is introduced here along with regular action verbs.

Materials

The following materials were used in Phase XI, Part 2: Seventeen word cards that represent prepositions, new verbs, new nouns; and appropriate data sheets.

Prepositions	Verbs	Nouns
in-out	bring	cup
to-from	get	sink
on-off	give	table
of	take	
	put	
	pick up	
	"is"	

Arrangement

T presented the materials to Ss at the table in the Reading Corner.

Part 3 - When presented with sentence cards that contain prepositional phrases, students will label the sentences in response to the verbal cue "Read the sentences."

Materials

The following materials were used in Phase XI, Part 3: Nineteen directive sentences that contain prepositional phrases, and appropriate data sheets.

Sentences:

Set A

Dan, put the ball in the cup.
Dan, take the ball out of the cup.
Dan, put the cup in the sink.
Dan, take the cup out of the sink.
Dan, put the ball in the bus.
Dan, take the ball out of the bus.

Set B

Dan, take the cup off the table.
Dan, put the cup on the table.
Dan, take the ball off the bus.
Dan, put the ball on the bus.
Dan, take the ball off the table.
Dan, put the ball on the table.
Dan, pick up the ball.

Set C

Dan, give the ball to Ron.
Dan, get the ball from the bus.
Dan, get the cup from the sink.
Dan, take the cup to the sink.
Dan, give the cup to Ron.
Dan, get the cup from Ron.

Arrangement

T presented the materials to Ss at the chartboard in the Reading Corner.

Part 4 - When presented with sentences which contain prepositional phrases (e.g., Don, put the red ball in the wagon.), students will label and demonstrate comprehension by performing the actions directed by the sentences.

Materials

The following materials were used in Phase XI, Part 4: Nineteen directive sentences that contain prepositional phrases; 15 different objects placed on the table and the floor in the Action Area; and appropriate data sheets.

Arrangement

T presented the materials to Ss at the chartboard in the Reading Corner.

Phase XII: Teaching students to label chart stories which contain sentences with prepositional phrases and to demonstrate comprehension by performing the actions directed by the stories.

Part 1 - When presented a chart story with sentences containing prepositional phrases, students will label the words in the chart story and demonstrate comprehension by performing the action directed by the story in response to the verbal cue "Read the story. Do what the story tells you to do."

Materials

The following instructional materials were used in Phase XII, Part 1: Six different chart stories which contain sentences with prepositional phrases; various objects placed in the Action Area; and appropriate data sheets.

Chart Stories

Set 1 (8-9-10)

The Ball

The ball is red.
The ball is yellow.
The red ball is on the table.
Ron, give the red ball to Dan.

The Sink

The cup is big.
The cup is blue.
The big blue cup is in the sink.
Dan, get the big blue cup from the sink.

The Ball and the Cup

The ball is green.
The cup is blue.
The ball is in the cup.
Ron, take the ball out of the cup.

Set 2 (11-12-13)

Orange and Red

The ball is orange.
The cup is red.
Dan, give the ball to Ron.
Dan, take the cup to the sink.

The Cup and the Ball

The cup is on the table
The ball is in the cup.
Nancy, give the ball to Dan.
Nancy, give the cup to Johnson.

Push the Wagon

The big balloon is in the bus.
The little balloon is in the wagon.
Ron, put the balloon in the bus.
Ron, push the wagon to Nancy.

Arrangement

Ss were seated in the Reading Corner in front of the chartboard. Ss were required to select an object from the Action Area and demonstrate the action.

In addition to data sheets, samples of which are included in the Appendix B, consumable reinforcers in the form of water, juice, pretzels, dry cereal, a toy camera, and a Kaliadoscope were used. As the program progressed, S_1 and S_2 responded to social reinforcement in the form of "Wow!", "Good job," "Super!" and whistles.

TEACHING PROCEDURES

Phase I: Teaching students to label printed words that represent selected objects (e.g., Q: What is this word? A: Wagon) and to demonstrate comprehension of the printed words by touching it in response to a verbal cue (e.g., Touch it).

Phase Design: Phase I consists of seven parts. Part 7 embodies the criterion responses. The design used to teach and verify criterion responding is as follows:

A) Measure the skills required in Part 7
B) Measure the skills required in Parts 6, 5, 4, 3, 2 and 1
C) Teach the skills required in Part 1
D) Teach the skills required in Part 2
E) Teach the skills required in Part 3
F) Teach the skills required in Part 4
G) Teach the skills required in Part 5
H) Teach the skills required in Part 6
I) Measure the skills required in Part 7
J) Teach the skills required in Part 7

Phase I, Part 1: When presented with an object, students will label the object in response to the verbal cue "What is this?"

Baseline Measures were obtained using the following procedures: Ss were seated at a table facing T. T placed 5 objects on the table in front of Ss and said, "S_1, what is this?" If S_1 responded correctly or incorrectly, T recorded the response without indicating the accuracy of the response. All responses were followed by the neutrally spoken "Thank you." T then presented a different object to S_2, etc. This procedure was implemented until each S had two opportunities to label each of the 5 objects.

Teaching Procedures

Step 1 - Ss were seated at a table directly in front of T. T placed one of the 5 objects on the table in front of S_1 and said, "S_1, what is this?" If S_1 correctly labeled the object, T smiled, said "Good, etc.," issued a consumable consequence, recorded a correct response, and presented a different object to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No!" repeated the cue, "S_1, what is this?" and verbally modeled the correct response "This is a wagon." T then repeated the cue, "S_1, what is this?" If S_1 correctly imitated the verbal model, T smiled and said, "Good, etc.," recorded "M" on the data sheet, did not deliver a consumable consequence, and presented a different object to S_2, etc.

Step 3 - If S_1 still made no response or made an incorrect response, T said, "No. This is a wagon." recorded an incorrect response, and teaching was terminated. S_2 was then given a different object to label, etc.

These procedures were implemented until each S labeled each of the five objects on two consecutive occasions without assistance from T.

Phase I, Part 2: When presented a group of objects students will visually discriminate (touch) one object in response to printed and verbal cues (e.g., The teacher presents a word card upon which the word wagon is printed and says, "This is the word wagon. Touch a wagon.").

Baseline measures were obtained using the following procedures: Ss were seated at a table in front of T. T placed 5 objects on the table in front of S_1, presented a printed word card, and said, "S_1, this is the word wagon. Touch a wagon." If S_1 did or did not touch a wagon, T recorded the response without indicating the accuracy of the response. All responses were followed by the neutrally spoken "Thank you." T then presented a different word card to S_2, etc. This procedure was implemented until each S had two opportunities to touch the 5 objects in response to the verbal and printed word cues.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T placed 5 objects on the table in front of S_1, presented a word card, and said, "S_1, this is the word wagon. Touch a wagon." If S_1 responded by touching the correct object, T smiled, said "Good touching S_1," issued a consumable consequence, recorded a correct response and presented a different word card to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No!" presented the word card again, and said, "S_1, this is the word wagon. Touch a wagon." as T touched the correct object. T then presented the word card again, and said, "S_1, this is the word wagon. Touch a wagon." If S_1 responded correctly by touching the wagon, T smiled, said "Good touching," recorded "M" on the data sheet, did not deliver a consumable consequence, and presented a different word card to S_2, etc.

Step 3 - If S_1 still made no response or made an incorrect response, T said, "No!" presented the word again, and said, "S_1, this is the word wagon. Touch a wagon" as T primed (physically guided) the correct response by moving S_1's hand until it touched the correct object, recorded a "P" on the data sheet, did not deliver a consumable consequence, and presented a different word card to S_2, etc.

These procedures were implemented until each S touched each of the five objects in response to verbal and printed word cues, on 2 consecutive occasions without assistance from T.

Phase I, Part 3: When presented with a group of objects and with the corresponding word cards in front of the objects, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents a word card and says, "This is the word wagon. Touch another word wagon.").

Baseline measures were obtained using the following procedures· Ss were seated at a table in front of T. T placed 5 objects and the corresponding word cards for each object on the table in front of S_1. T presented a word card and said, "S_1, this is the word wagon. Touch another word wagon." If S_1 correctly or incorrectly responded, T recorded the response without indicating the accuracy of the response. All responses were followed by the neutrally spoken "Thank you." T then presented a different word card to S_2, etc. Baseline measures were concluded when each S had two opportunities to respond to each of the 5 word cards.

Teaching Procedures

Step 1 - Ss were seated at a table directly in front of T. T placed 5 objects and the corresponding word cards on the table in front of S_1. T presented a word card and said, "S_1, this is the word wagon. Touch another word wagon." If S_1 correctly responded by touching the correct word, T smiled and said, "Good touching word wagon, S_1" issued a consumable consequence, recorded a correct response, and presented a different word to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No!" presented the word card again and said, "S_1, this is the word wagon. Touch another word wagon." as T touched the correct word. T again presented the word card and repeated the cue, "S_1, this is the word wagon. Touch another word wagon." If S_1 responded correctly by touching the word wagon, T smiled, said "Good touching the word wagon," recorded "M" on the data sheet, did not issue a consumable consequence, and presented a different word card to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No!" presented the word card again, and said, "S_1, this is the word wagon. Touch another word wagon," as T primed the correct response by moving S_1's hand until it touched the correct word card. T then said, "This is the word wagon. S_1, touch the word wagon." recorded the response "P" on the data sheet, did not deliver a consumable consequence, and presented a different word card to S_2, etc.

These procedures were followed until each S touched each of the 5 word cards correctly without assistance from T on 2 consecutive occasions.

Phase I, Part 4: When presented with words that represent objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents a word card and says, "This is the word wagon. Touch another word wagon.").

Baseline measures were obtained using the following procedures: Ss were seated at a table in front of T. T placed 5 word cards on the table in front of S_1. T presented a word card and said, "S_1, this is the word wagon. Touch another word wagon." If S_1 responded correctly or incorrectly, T recorded the response without indicating the accuracy of the response by following the response with a neutrally spoken

"Thank you." *T* then presented a different word to S_2, etc. Baseline procedures were concluded when each *S* had two opportunities to respond to each of 5 word cards.

Teaching Procedures

Step 1 - *Ss* were seated at a table in front of *T*. *T* placed 5 word cards in a row in front of S_1. *T* presented a word card and said, "S_1, this is the word *wagon*. Touch another word *wagon*." If S_1 responded correctly, *T* smiled, said "Good touching the word *wagon*." issued a consumable consequence, recorded a correct response, and presented a different word card to S_2, etc.

Step 2 - If S_1 did not make a response or made an incorrect response, *T* said, "No!" presented the word card again, and said, "S_1, this is the word *wagon*. Touch another word *wagon*." as *T* touched the correct word. *T* presented the word card and repeated the verbal cue, "S_1, this is the word *wagon*. Touch another word *wagon*." If S_1 responded by correctly touching the word *wagon*, *T* smiled, said "Good touching word *wagon*," recorded "M" on the data sheet, did not issue a consumable consequence, and presented a different word card to S_2, etc.

Step 3 - If S_1 still made no response or made an incorrect response, *T* said, "No!" presented the word card again, and said, "S_1, this is the word *wagon*. Touch another word *wagon*." as *T* primed the correct response by moving S_1's hand until it touched the correct word card. *T* said, "This is the word *wagon*. S_1 touch the word *wagon*." recorded the response "P" on the data sheet, did not deliver a consumable consequence, and presented a different word card to S_2, etc.

These procedures were implemented until each *S* touched each of the 5 correct word cards on two consecutive occasions without assistance from *T*.

Phase I, Part 5: *When presented with words that represent objects students will visually discriminate words in response to the verbal cue, "Touch the word wagon." and will label the word in response to the verbal cue "What is this word?"*

Baseline measures were obtained using the following procedures. *Ss* were seated at a table in front of *T*. *T* placed 5 word cards in front of S_1 and said, "S_1 touch the word *wagon*." If S_1 correctly touched the word, *T* said, "What is that word?" If S_1 did not touch the word, *T* said, "Thank you." *T* recorded the responses without indicating the accuracy of the responses. All responses were followed by the neutrally spoken "Thank you." *T* presented a different verbal cue to S_2, etc. Baseline measures were concluded when each *S* had two opportunities to respond to each of 5 word cards.

Teaching Procedures

Step 1 - *Ss* were seated at a table in front of *T*. *T* placed the 5 word cards in a row directly in front of S_1. *T* said, "S_1, touch the word wagon." If $\underline{S}_1$ correctly responded, T smiled and said, "Good $\underline{S}_1$, what is that word?" If $\underline{S}_1$ made a correct touching and labeling response, T said, "Good $\underline{S}_1$," recorded correct responses, issued a consumable consequence, and presented a different verbal cue to $\underline{S}_2$, etc.

Step 2a - If $\underline{S}_1$ did not respond correctly or made no response, T said, "No! $\underline{S}_1$, touch the word wagon." as T modeled the correct response by touching the correct word. T repeated the verbal cue, "$\underline{S}_1$, touch the word wagon." If $\underline{S}_1$ touched the word wagon, T smiled, said "Good touching word wagon," recorded "M" on the data sheet, did not issue a consumable consequence, and presented the verbal cue, "What is this word?" If $\underline{S}_1$ responded correctly, T recorded a correct labeling response, and said "Good $\underline{S}_1$, wagon." T then presented a different verbal cue to $\underline{S}_2$, etc.

Step 2b - If $\underline{S}_1$ did not respond correctly or made no response, T said, "No!" T repeated the cue "$\underline{S}_1$, touch the word wagon." If $\underline{S}_1$ correctly responded, T said, "Good $\underline{S}_1$, what is that word?" If $\underline{S}_1$ made no response or responded incorrectly, T said, "No! $\underline{S}_1$, touch the word wagon. This word is wagon. What is this word?" If $\underline{S}_1$ correctly labeled the word, T said, "Good. Wagon." recorded M/M on the data sheet, did not issue a consumable, and presented a different cue to $\underline{S}_2$, etc.

Step 3a - If $\underline{S}_1$ did not respond or made an incorrect response, T said, "No!" and repeated the verbal cue, "$\underline{S}_1$, touch the word wagon." as T primed the correct response by moving $\underline{S}_1$'s hand until it touched the correct word. T said, "$\underline{S}_1$, what is this word?" If $\underline{S}_1$ responded correctly by labeling the word, T said, "Good. Wagon." recorded a "P" (prime) and a "+" (P/+) did not issue a consumable consequence, and proceeded to present a different cue to $\underline{S}_2$, etc.

Step 3b - If $\underline{S}_1$ did not respond or made an incorrect response, T said, "No!" T repeated the verbal cue "$\underline{S}_1$, touch the word wagon." and primed the correct response by moving $\underline{S}_1$'s hand to the correct word. T said, "$\underline{S}_1$, what is this word?" If $\underline{S}_1$ did not respond or responded incorrectly, T said, "No!" repeated the verbal cue, "$\underline{S}_1$, touch the word wagon." as T primed the correct response. T said, "This word is wagon. What is this word?" If $\underline{S}_1$ imitated the verbal model, T said, "Good $\underline{S}_1$," recorded "P/M" (prime-model) and proceeded to $\underline{S}_2$, presenting a different verbal cue.

These procedures were followed until each S touched and labeled each of the 5 word cards on two consecutive occasions without assistance from T.

Phase I, Part 6: When presented with a word that represents an object, students will label that word in response to the verbal cue "What is this word?"

Baseline measures were obtained using the following procedures: Ss were seated at a table in front of T. T presented a word card in front of $\underline{S}_1$ and said, "$\underline{S}_1$, what is this word?" Whether $\underline{S}_1$ responded correctly or incorrectly, T recorded the response without indicating the accuracy of the response by following the response with a neutrally spoken "Thank you." T then presented another word card to S_2, etc. Baseline measures were concluded when each S had responded to 2 presentations of each word card and the verbal cue, "What is this word?"

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T placed one of 5 word cards in front of S_1. T said, "S_1, what is this word?" If S_1 responded correctly, T said, "Good S_1," recorded a correct response "+" on the data sheet, issued a consumable consequence, and presented a different word card to S_2, etc.

Step 2 - If S_1 did not respond correctly or made no response, T said, "No!" T presented the word card again and repeated the verbal cue, "S_1, what is this word? This is the word *wagon*. S_1, what is this word?" If S_1 correctly imitated T's verbal model, T said, "Good labeling S_1," recorded "M" on the data sheet, did not issue a consumable, and proceeded to present a different word card to S_2, etc.

Step 3 - If S_1 did not make a response or responded incorrectly, T said, "No!" presented the word card, and repeated the verbal cue, "S_1, this is the word *wagon*. What is this word?" If S_1 correctly imitated T's verbal model, T recorded "M_2" on the data sheet, and presented a different word cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect response, T said, "No, this is the word *wagon*," recorded an incorrect response, and terminated teaching. S_2 was then presented a different word to label.

Instruction continued until each S labeled each of 5 words correctly on 2 consecutive occasions without assistance from T.

Phase I, Part 7: *When presented with words that represent objects, students will label the words and demonstrate comprehension by discriminating the objects the words represent.*

Baseline measures were obtained using the following procedures: Ss were seated at a table in front of T. T placed 5 objects on the table in front of S_1. T presented a word card and said, "S_1, what is this word?" If S_1 correctly labeled the word, T said, "Touch it." If S_1 did not correctly label the word, T said, "Thank you." T recorded the responses without indicating the accuracy of the responses. All responses were followed by the neutrally spoken "Thank you." T then presented a different word to S_2, etc. The above procedure was implemented until each S had the opportunity to respond to each of 5 word cards on two consecutive occasions.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. 5 objects were placed on the table in front of S_1. T presented a word card and said, "S_1, what is this word?" If S_1 responded correctly, *T* said, "Touch it." If S_1 responded correctly, *T* said, "Good S_1," issued a consumable consequence, recorded a correct response, and presented a different verbal cue to S_2, etc.

Step 2a - If S_1 did not make a response or made an incorrect labeling response, *T* said, "No!" presented the word card and repeated the cue, "S_1, what is this word?" *T* verbally modeled the correct response "This is the word *wagon*." *T* repeated the cue "S_1, what is this word?" If S_1 correctly imitated the verbal model, *T* smiled, said "Good," recorded "M" on the data sheet, did not deliver a consumable consequence, and said, "S_1, touch it." If S_1 responded correctly, *T* smiled, said "Good S_1," recorded a correct response on the data sheet, and presented a different word card to S_2, etc.

Step 2b - If S_1 labeled the word correctly but did not make a correct touching response, *T* said, "No!" presented the word card and repeated the verbal cue, "S_1, what is this word?" If S_1 correctly labeled the word, *T* said "Good," recorded a correct response, and said, "Touch it" as *T* touched the correct object. *T* presented the word card again and repeated the verbal cue, "S_1, what is this word?" If S_1 correctly labeled the word, *T* recorded a correct response and said, "Good, touch it." If S_1 correctly touched the object, *T* said "Good," recorded an "M", did not issue a consumable consequence, and presented a different word card to S_2, etc.

Step 3 - If S_1 did not respond correctly or made no response, *T* said, "No! This is the word *wagon*." and touched the correct object. *T* recorded the incorrect response on the data sheet and terminated teaching.

These procedures were implemented until each *S* had labeled each of 5 word cards and touched the correct object on two consecutive occasions without assistance from *T*.

Phase II: *Teaching students to label printed words that represent selected actions (e.g., push) and to demonstrate comprehension by performing the actions in response to the verbal cue "Do it."*

Phase Design: Phase II consists of ten parts. Part 10 embodies the criterion responses. The general design used here to teach and verify criterion responding is described in Phase I.

Phase II, Part 1: *Students will perform actions in response to verbal cues (e.g., "Show me push.")*.

Baseline measures were obtained in a group setting at a large table in front of the room, with *S*s alternating turns. *T* said, "S_1, stand up. Show me push." *T* waited 5-15 seconds for S_1 to move to the *Action Area* and perform the action directed. If S_1 could perform the action without the use of an object, it was considered an acceptable response. If S_1 responded correctly or incorrectly, *T* recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each *S* had two opportunities to respond to each of the 5 verbal directions.

Teaching Procedures

Step 1 - *S*s were seated at a large table in the front of the room. *T* said, "S_1, stand up. Show me *push*." *T* waited 5-10 seconds for S_1 to move to the *Action Area* and perform the action directed. If S_1 correctly performed the action, *T* smiled, said, "Good S_1," recorded a correct response, issued a consumable, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, *T* said, "No!" repeated the cue "S_1, show me *push*." modeled the correct action response, and repeated, "S_1, show me *push*." If S_1 imitated the modeled response, *T* recorded "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, *T* said, "No! S_1, show me *push*." *T* primed the action response by physically guiding S_1 to the *Action Area*, and assisted him in performing the action. *T* recorded a "P," did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, *T* said, "No, S_1!" proceeded to the *Action Area*, said, "Show me *push*." and pushed the wagon. *T* recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. A different cue was presented to S_2, etc.

These procedures were implemented until each *S* performed each of the 5 actions on two consecutive occasions, without assistance from *T*.

Phase II, Part 2: When presented with pictures that depict actions, students will visually discriminate (touch) pictures in response to verbal cues (e.g., "Touch the picture of push.").

Baseline measures were obtained using the following procedures: The measures were obtained in a group setting with *S*s alternating turns. *T* placed five pictures on the table in front of S_1 and said, "S_1, touch the picture of push." *T* recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." *T* presented a different cue to S_2, etc. Baseline measures were concluded when each *S* had two opportunities to touch each of the 5 pictures in response to verbal cues.

Teaching Procedures

Step 1 - *S*s were seated at a large table in the front of *T*. *T* placed five pictures on the table in front of S_1 and said, "S_1, touch the picture of *push*." If S_1 made a correct response, *T* smiled, said, "Good job S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, *T* said, "No! S_1, touch picture of *push*." as *T* touched the correct picture. *T* then repeated the cue, "S_1, touch the picture of *push*." If S_1 responded by touching the correct picture, *T* recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, *T* said, "No! S_1, touch the picture of *push*." as *T* touched the correct picture. *T* repeated the cue, "S_1, touch the picture of *push*." If S_1 responded by touching the correct picture, *T* recorded "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, *T* said, "No! S_1, touch the picture of *push*." as *T* primed the response by physically guiding S_1's hand until it touched the correct picture. *T* recorded a "P," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 5 - If S_1 made no response or made an incorrect response, *T* said, "No! S_1, touch the picture of *push*. S_1, this is the picture *push*." as *T* touched the correct picture. *T* recorded an incorrect response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

These procedures were implemented until each *S* touched each of the 5 pictures correctly on two consecutive occasions without assistance from *T*.

Phase II, Part 3: *When presented with a model performing actions, students will label the actions of the model in response to a verbal cue (e.g., "What is (teacher) doing?")*.

Baseline measures were obtained using the following procedures at a large table with *S*s alternating turns. *T* had previously requested a teacher (T_2) to perform 5 selected actions. When T_2 performed a selected action, *T* said, "S_1, what is T_2 doing?" If S_1 responded correctly or incorrectly, *T* recorded the responses without indicating accuracy. All responses were followed by a neutrally spoken "Thank you." Baseline measures were concluded when each *S* had responded on two consecutive occasions to each of 5 demonstrations.

Teaching Procedures

Step 1 - *S*s were seated at a large table in the front of *T*. T_2 was in the *Action Area*. *T* had given T_2 the action cues prior to the beginning of instruction. When T_2 performed a selected action, *T* said, "S_1, what is *T* doing?" If S_1 responded correctly, *T* smiled and said, "Wow, good S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or labeled the action incorrectly, *T* said, "No! S_1." and T_2 repeated the demonstration. *T* said, "What is T_2 doing?" and verbally modeled the correct response, "*Push*." T_2 repeated the demonstration, and *T* said, "S_1, what is T_2 doing?" If S_1 correctly imitated the verbal model, *T* said, "Good S_1," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No, S_1 push." T_2 repeated the demonstration and T said, "S_1, what is T doing?" If S_1 correctly imitated the verbal model, T recorded "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No S_1. Push." recorded an incorrect response, did not issue a consumable, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S labeled each of the 5 actions correctly on two consecutive occasions without assistance from T.

Phase II, Part 4: When presented with pictures that represent actions, students will label the action pictures in response to verbal cues (e.g., "What is the boy doing?").

Baseline measures were obtained in the following manner: Ss were seated at a large table in front of T. T alternately presented the individual pictures. T said, "S_1, what is the boy/girl doing?" If S_1 responded correctly or incorrectly, T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T presented a different picture to S_2, etc. Baseline measures were concluded when each S had two opportunities to respond to each of 5 pictures.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. T alternately presented the pictures to Ss. T said, "S_1, what is boy/girl doing?" If S_1 labeled the action correctly, T said, "Good S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No! S_1, what is boy doing?" "Boy push." and repeated the cue, "S_1, what is boy doing?" If S_1 labeled the picture of the action correctly, T said, "Good," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No! S_1." requested T_2 to demonstrate the action and said, "S_1, look. What is T doing?" If S_1 correctly labeled the demonstrated action, T said "Good, S_1 touch the picture of push." T said, "Good," and repeated "S_1, what is boy doing?" If S_1 labeled the picture of the action, T recorded a "VM," (visual model) did not issue a consumable, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No! S_1, boy push." recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were followed until each S labeled the 5 pictures correctly on 2 consecutive occasions without assistance from T.

Phase II, Part 5: When presented with pictures and corresponding word cards, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push and says, "This is the word push. Touch another word push.").

Baseline measures were obtained in the following manner: Ss were seated at a table in front of T in the Reading Corner. T placed the 5 pictures, each with a corresponding word card attached to the upper left hand corner, in front of S_1. T presented another word card and said, "S_1, this is the word push. Touch another word push." If S_1 responded correctly or incorrectly, T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken, "Thank you." Baseline measures were concluded when each S responded on two consecutive occasions to each of 5 word card-picture presentations.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. T placed the 5 pictures each with a corresponding word card attached to the upper left hand corner, in front of S_1. T presented another word card and said, "S_1, this is word push. Touch another word push." If S_1 correctly responded, T said, "Wow, good S_1." recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No! S_1, this is the word push. Touch another word push." as T touched the correct word. T presented the cues again, "This is the word push. Touch another word push." If S_1 touched the correct word, T said, "Good S_1," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No! S_1, this is the word push. Touch another word push." as T primed the response by physically guiding S_1's hand until it touched the correct word. T recorded a "P," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No! S_1, this is the word push." as T touched the correct word. T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were followed until each S touched each of the 5 word cards without assistance from T on two consecutive occasions.

Phase II, Part 6: When presented with word cards that represent actions, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card "push" and says, "This is the word push. Touch another word push.").

Baseline measures were obtained using the following procedures: Ss were seated at a large table in front of T. T placed one set of word cards on the chartboard, presented a card from the second set to S_1 and said, "S_1, this is the word push. Touch another word push." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T presented a different cue to S_2, etc. Baseline measures were concluded when each S had two opportunities to respond to each of 5 word cards.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. T placed one set of printed word cards on the chartboard. T presented the word cards in rotation to Ss and said, "S_1, this is the word push. Touch another word push." If S_1 responded correctly, T said, "Wow! Good S_1," recorded a correct response, issued a consumable consequence, and presented a different word card to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect touching response, T said, "No! S_1, this is the word push. Touch another word push." as T touched the correct word. T repeated the cue, "S_1, this is the word push. Touch another word push." If S_1 touched the correct word, T said, "Good S_1," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No! S_1, this is the word push. Touch another word push." as T primed the correct response by physically guiding S_1's hand until it touched the correct word. T recorded a "P," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No! S_1, this is the word push." as T touched the correct word. T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

Instruction continued until each S touched each of the 5 word cards on two consecutive occasions without assistance from T.

Phase II, Part 7: When presented with word cards that represent actions, students will visually discriminate word cards in response to verbal cue (e.g., "Touch the word push.") and label the word in response to a verbal cue, "What is that word?"

Baseline measures were obtained in the following manner: Ss were seated at a table in front of T. T placed the 5 word cards on the table in front of S_1, and said, "S_1, touch the word push." If S_1 touched the correct word, T said, "Good, what is that word?" If S_1 did not touch the correct word, T said, "Thank you." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to respond to each of the 5 word cards.

Teaching Procedures

Step 1 - *S*s were seated at the large table in front of *T*. *T* placed the 5 word cards on the table in front of S_1 and said, "S_1, touch the word *push*." *T* waited 5-10 seconds and said, "S_1, what is that word?" If S_1 made a correct response, *T* said, "Good S_1," recorded a correct touching response and a correct labeling response, issued a consumable consequence and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect touching response, *T* said, "No! S_1, touch the word *push*." as *T* touched the correct word. *T* repeated the cue "S_1, touch the word *push*." If S_1 touched the correct word, *T* said, "Good touching word *push*," recorded an "M" on the data sheet, did not issue a consumable consequence and said,"S_1, what is that word?" If S_1 correctly labeled the words, *T* recorded a correct response,and said, "Good S_1." *T* presented a different cue to S_2, etc.

Step 2b - If S_1 made no response or made an incorrect labeling response, *T* said "No!" and repeated the cue,"S_1, touch word *push*." If S_1 touched the correct word, *T* said, "Good S_1, what is that word?" If S_1 made no response or responded incorrectly, *T* said, "No! S_1, touch the word *push*. That is the word *push*. What is that word?" If S_1 correctly touched the word and labeled the word, *T* said, "Good S_1,"recorded "+/M" on the data sheet, did not issue a consumable consequence,and presented a different cue to S_2, etc.

Step 3a - If S_1 did not respond or made an incorrect touching response, *T* said, "No!" *T* repeated the cue "S_1, touch the word push." as *T* primed the correct response by physically guiding S_1's hand until it touched the correct word. *T* said, "S_1, what is this word?" If S_1 correctly labeled the word, *T* said, "Good S_1," recorded a "P/+," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3b - If S_1 did not respond or made incorrect responses, *T* said, "No!" repeated the cue, "S_1, touch the word *push*." as *T* primed the correct response by physically guiding S_1's hand until it touched the correct word. *T* said, "S_1, what is that word?" If S_1 did not respond or labeled the word incorrectly, *T* said, "No!" *T* repeated the verbal cue, "S_1, touch the word *push*." If S_1 touched the correct word, *T* said, "That is the word push. What is that word?" If S_1 labeled the word correctly, *T* said, "Good S_1," recorded "P/M" and presented a different verbal cue to S_2, etc.

Step 4 - If S_1 made no responses or made incorrect responses, *T* said, "No S_1. This is the word *push*." as *T* touched the correct word. *T* recorded an incorrect response, did not issue a consumable consequence and presented a different cue to S_2, etc.

Instruction continued until each *S* correctly touched and labeled each of the 5 word cards on two consecutive occasions without assistance from *T*.

Phase II, Part 8: *When presented with word cards that represent actions, students will label the word cards in response to the verbal cue "What is this word?"*

Baseline measures were obtained in the following manner: *S*s were seated at a table in front of *T*. *T* presented a word card to S_1 and said, "S_1, what is this word?" If S_1 labeled the word correctly or incorrectly, *T* recorded the response without indicating accuracy. All responses were followed with the neutrally spoken "Thank you." *T* then presented the verbal cue to S_2, etc. Baseline measures were concluded when each *S* had two opportunities to respond to each of 5 word cards and the verbal cue, "What is this word?"

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. *T* presented a word card to S_1, and said, "S_1, what is this word?" If S_1 made a correct labeling response, *T* said, "Good S_1," recorded a correct response on the data sheet, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 did not respond or made an incorrect labeling response, *T* said, "No!" presented the word card again, and repeated the verbal cue, "S_1, what is this word? This word is *push*. S_1, what is this word?" If S_1 correctly labeled the word, *T* said, "Good S_1," recorded "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond or made an incorrect labeling response, *T* said, "No!" presented the word card again and said, "S_1, this word is *push*. What is this word?" If S_1 correctly labeled the word, *T* recorded the response "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect labeling response, *T* said, "No! This word is *push*." recorded an incorrect response, and terminated teaching. *T* presented a different cue to S_2, etc.

Instruction continued until each *S* correctly labeled each of 5 words correctly on two consecutive occasions without assistance from *T*.

Phase II, Part 9: *When presented with word cards that represent actions, students will label the word cards in response to the verbal cue "What is this word?" and then demonstrate comprehension by visually discriminating a picture depicting the action in response to the verbal cue "Touch it."*

Baseline measures of *S*'s abilities to label the words and touch the correct picture were obtained in the following manner: *S*s were seated at a table in front of *T*. *T* placed five pictures on the chartboard in front of *S*s. *T* presented a word card to S_1 and said, "S_1, what is this word?" If S_1 labeled the word correctly, *T* said, "Touch it." If S_1 did not label the word correctly, *T* said, "Thank you." *T* recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." *T* presented a different cue to S_2, etc. The above procedure was implemented until each *S* had the opportunity to respond to each of 5 word cards on two consecutive occasions.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. The five pictures were placed on the chartboard in front of Ss. T presented a word card to S_1 and said, "S_1, what is this word?" If S_1 made a correct response, T said, "Good S_1, touch it." If S_1 touched the correct picture, T said, "Wow! Good S_1," recorded a correct labeling response and a correct touching response, issued a consumable consequence, and presented a different cue to S_2.

Step 2 - If S_1 did not respond or made an incorrect labeling response, T said, "No!" presented the word card and repeated the cue, "S_1, what is this word?" T verbally modeled the correct response, "This is the word push." and repeated the cue, "S_1, what is this word?" If S_1 correctly labeled the word, T smiled, said, "Good," recorded "M" on the data sheet, did not deliver a consumable consequence and said, "S_1, touch it." If S_1 touched the correct picture, T smiled and said, "Good S_1," recorded a correct response on the data sheet, and presented a different cue to S_2, etc.

Step 2b - If S_1 labeled the word correctly but did not make a correct touching response, T said, "No!" presented the word card, and repeated the verbal cue "S_1, what is this word?" If S_1 correctly labeled the word, T said, "Good S_1, touch it." as T touched the correct word. T presented the word card again and repeated the verbal cue, "S_1, what is this word?" If S_1 labeled the word correctly, T recorded a correct response, and said "Good. Touch it." If S_1 touched the correct picture, T said, "Good S_1," recorded an "M," did not issue a consumable, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made incorrect labeling and touching responses, T said, "No! S_1." T presented the word card, said, "S_1, this is the word push.", touched the correct picture and said, "Touch the picture of push." T recorded incorrect labeling and touching responses, did not issue a consumable consequence and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S correctly labeled each of the five word cards and touched the correct pictures on two consecutive occasions without assistance from T.

Phase II, Part 10: Students will label printed words that represent actions (e.g., push) and then demonstrate comprehension by performing the actions in response to verbal cues (e.g., "Do it.").

Baseline measures of each S's ability to label a word and perform the action was obtained prior to other baseline measures or instruction on other parts. The measures were obtained in a group setting, with Ss alternating turns. T presented a word card and said, "S_1, what is this word?" T waited 5-10 seconds for S_1 to label the word. If S_1 labeled the word, T said, "Do it." If S_1 did not label the word, T said, "Thank you." The materials had previously been placed in the Action Area. T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were completed when each S had two opportunities to label each of 5 word cards and perform 5 actions.

Teaching Procedures

Step 1 - T placed 5 objects in the Action Area. Ss were seated at a large table in front of T. T presented a word card to S_1 and said, "S_1, what is this word?" T waited 5-10 seconds for S_1 to respond. If S_1 made a correct labeling response, T said, "Do it." If S_1 made a correct action response, T recorded a correct labeling response and a correct action response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect labeling response, T said, "No!" presented a word card and said, "S_1, what is this word? This word is push. What is this word?" If S_1 labeled the word correctly, T said, "Good. Do it." If S_1 made a correct action response, T said, "Good S_1," recorded a "M" labeling response and a "+" action response, did not issue a consumable, and presented a different cue to S_2, etc.

Step 2b - If S_1 made no response or made an incorrect action response, T said, "No!" presented the word card and said, "S_1, what is this word?" If S_1 correctly labeled the word, T said, "Good. Look. Do it." as T performed the correct action. T presented the word card again and said, "S_1, what is this word?" If S_1 labeled the word, T said, "Do it." If S_1 correctly performed the action response, T said, "Good S_1," recorded a correct labeling response and a modeled action response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3a - If S_1 made no response or made an incorrect labeling response, T said, "No! S_1, the word is push.", performed the action, recorded an incorrect labeling response, and an incorrect action response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

Step 3b - If S_1 made no response or made an incorrect action response, T said, "No! S_1, this word is push." as T presented the word card and performed the action. T recorded an incorrect labeling response and an incorrect action response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

Instruction continued until each S correctly labeled the 5 word cards and correctly performed the 5 actions on two consecutive occasions without assistance from T.

Phase III: Teaching students to label printed words that represent selected verb-noun phrases (e.g., push wagon) and to demonstrate comprehension by performing the actions the phrases describe.

Phase Design: Phase III combined the components of Phase I and Phase II. Phase III consists of ten parts. Part 10 embodies the criterion responses. The general design used to teach and verify criterion responding is described in Phase I.

Phase III, Part 1: Students will perform actions represented by verb-noun phrases (e.g., push wagon) in response to verbal cues (e.g., "Show me push wagon.").

Baseline measures were obtained in a group setting at a large table in front of T with Ss alternating turns. T said, "S_1, stand up. Show me push wagon." T waited 5-10 seconds for S_1 to move to the Action Area and perform the action. T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to respond to each of 5 verbal directions.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. T said,"S_1, stand up. Show me push wagon." T waited 5-10 seconds for S_1 to move to the Action Area and perform the action. If S_1 correctly performed the action, T smiled, said, "Good S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect action response, T said,"No!" repeated the cue "S_1, show me push wagon." demonstrated the correct action response, and said, "S_1, show me push wagon." If S_1 correctly performed the action, T recorded "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said "No! S_1, show me push wagon." T primed the action by physically guiding S_1 to the Action Area, and assisting him in completing the action. T recorded a primed response, did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect action response, T said,"No! S_1." T proceeded to the Action Area, said,"Show me push wagon." and pushed the wagon. T recorded an incorrect action response, did not issue a consumable consequence, and terminated teaching. A different cue was presented to S_2, etc.

Instruction continued until each S had performed the 11 actions correctly on two consecutive occasions without assistance from T.

Phase III, Part 2: When presented with models performing actions using objects (e.g., The teacher pushing a wagon.) students will label the actions using verb-noun phrases in response to the cue "What is (teacher) doing?").

Baseline measures were obtained in a group setting with Ss alternating turns. Ss were seated at a large table in front of T. T had previously requested T_2 to perform 11 actions. When T_2 performed a selected action, T said, "S_1, what is T_2 doing?" T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had had two opportunities to label the demonstrated actions.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. T_2 was in the Action Area. T had given T_2 the action cues prior to the beginning of instruction. T said, "S_1, what is T_2 doing?" If S_1 correctly responded, T smiled, said, "Wow! Good S_1," issued a consumable consequence, and presented a different cue to S_2.

Step 2 - If S_1 made no response or made an incorrect labeling response, T said, "No! S_1." T_2 repeated the demonstration, and T said, "What is T doing? Push wagon. T push wagon." T_2 repeated the demonstration again, and T said, "S_1, what is T doing?" If S_1 correctly imitated the verbal model, T said, "Good S_1," recorded an "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect labeling response, T said, "No, S_1 push wagon. T push wagon." When T_2 repeated the demonstration, T said, "S_1, what is T doing?" If S_1 correctly labeled the action, T recorded "M_2" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No S_1. Push wagon. T push wagon." recorded an incorrect response, did not issue a consumable, and terminated teaching. T presented a different cue to S_2, etc.

Instruction continued until each S had correctly labeled the action on two consecutive occasions without assistance from T.

Phase III, Part 3: When presented with pictures depicting actions, students will visually discriminate (touch) an action picture in response to printed and verbal cues (e.g., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch push wagon.").

Baseline measures were obtained in the following manner: Ss were seated at a large table in front of T. Three picture cards were placed on the table in front of S_1, T presented a word card and said, "S_1, touch picture push wagon." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to respond to 11 different word cards and pictures.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. T placed 3 pictures on the table and said, "S_1, these are words push wagon. Touch picture of push wagon." If S_1 made a correct touching response, T smiled and said, "Good job S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect touching response, T said, "No! S_1, push wagon. Touch picture of push wagon." If S_1 touched the correct picture, T recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect touching response, *T* said, "No! S_1, these are words *push* *wagon*. S_1, touch the picture *push* *wagon*." as *T* touched the correct picture. *T* repeated the cue again, "S_1, these are words *push* *wagon*. Touch the picture of *push* *wagon*." If S_1 touched the correct picture, *T* recorded "M2," did not issue a consumable consequence, and presented a different verbal cue to S_2, etc.

Step 4 - If S_1 made no response or an incorrect touching response, *T* said, "No! S_1, these are words *push* *wagon*. S_1, touch picture of *push* *wagon*." as *T* primed the response by guiding S_1's hand until it touched the correct picture. *T* recorded a "P," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 5 - If S_1 made no response or made an incorrect touching response, *T* said, "No! S_1, these are words *push* *wagon*. Touch the picture *push* *wagon*." and touched the correct picture. *T* recorded an incorrect touching response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Instruction continued until each *S* had touched each of 11 pictures correctly in response to verbal and printed cues on two consecutive occasions without assistance from *T*.

Phase III, Part 4: *When presented with pictures that represent verb-noun phrases, students will label the actions in response to the verbal cue "What is the boy/girl doing?"*

Baseline measures were obtained in the following manner: *S*s were seated at a large table in front of *T*. *T* alternately presented the pictures to *S*s. *T* said, "S_1, what is boy/girl doing?" If S_1 correctly or incorrectly labeled the actions, *T* recorded the responses without indicating the accuracy of the responses. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each *S* had two opportunities to respond to each of 11 pictures.

Teaching Procedures

Step 1 - *S*s were seated at a large table in front of *T*. *T* alternately presented the pictures to *S*s. *T* said, "S_1, what is boy/girl doing?" If S_1 labeled the picture of the action correctly, *T* said, "Good S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect labeling response, *T* said, "No! S_1. Boy *push* *wagon*." *T* repeated the cue, "S_1, what is boy doing?" If S_1 labeled the picture of the action correctly, *T* said, "Good," recorded an 'M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect labeling response, *T* said, "No! S_1." *T* requested that T_2 demonstrate the action. *T* said, "S_1, look. What is *T* doing?" If S_1 labeled the demonstration correctly, *T* said, "Good, S_1 touch picture of *push wagon*." *T* then said, "Good, S_1, what is boy doing?" If S_1 labeled the picture of the action correctly, *T* recorded a "VM"(visual modeled) response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect labeling response, *T* said, "No! S_1, boy *push wagon*.", recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. *T* presented a different cue to S_2, etc.

Instruction continued until each *S* had correctly labeled the 11 pictures on two consecutive occasions without assistance from *T*.

Phase III, Part 5: *When presented with pictures and corresponding word cards in front of the pictures, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch the words push wagon.")*.

Baseline measures were obtained in a group setting in the *Reading Corner*. *T* placed 3 of eleven pictures, each with a corresponding word card attached to the upper left hand corner, in front of S_1. *T* presented another word card and said, "S_1, these are the words *push wagon*. Touch the words *push wagon*." *T* recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each *S* had two opportunities to respond to each of 11 word card-picture presentations.

Teaching Procedures

Step 1 - *S*s were seated at a large table in front of *T*. *T* placed 3 of eleven pictures, each with a corresponding word card attached to the upper left hand corner, in front of S_1. *T* presented another word card to S_1 and said, "S_1, these are the words *push wagon*. Touch the words *push wagon*." If S_1 touched the correct words, *T* said, "Wow! Good S_1," recorded a correct response on the data sheet, issued a consumable consequence,and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect touching response, *T* said, "No! S_1, these are the words *push wagon*. Touch the words *push wagon*." as *T* touched the correct words. *T* repeated the verbal cue, "These are words *push wagon*. Touch the words *push wagon*." If S_1 touched the correct word card, *T* said, "Good S_1," recorded a modeled response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect touching response, *T* said, "No! S_1, these are the words *push wagon*. Touch the words *push wagon*." as *T* primed the response by guiding S_1's hand until it touched the correct words. *T* recorded a primed response, did not issue a consumable consequence,and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect touching response, T said, "No! S_1, these are the words push wagon." as T touched the correct words. T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

Instruction continued until each S correctly touched each of 11 word cards in response to verbal and printed cues, on two consecutive occasions without assistance from T.

Phase III, Part 6: When presented with word cards that represent verb-noun phrases, students will visually discriminate word cards in response to printed and verbal cues (i.e., The teacher presents the word card push wagon and says, "These are the words push wagon. Touch the words push wagon.").

Baseline measures were obtained using the following procedures: Ss were seated at a large table in front of T. T placed 3 word cards on the chartboard, presented a card from the second set of 3 to S_1 and said, "S_1, these are words push wagon. Touch words push wagon." T recorded the responses without indicating the accuracy of the responses. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had responded to two opportunities to each of 11 printed word cards.

Teaching Procedures

Step 1 - The Ss were seated at a large table in front of T. T placed 3 word cards on the chartboard. T presented a word card from the second set to S_1 and said, "S_1, these are the words push wagon. Touch the words push wagon." If S_1 responded correctly, T said, "Wow! Good S_1," recorded a correct response, issued a consumable consequence, and presented a different word card to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect touching response, T said, "No! S_1, these are the words push wagon. Touch the words push wagon." as T touched the correct words. T repeated the cue, "S_1, these are the words push wagon. Touch the words push wagon." If S_1 touched the correct words, T said, "Good S_1," recorded a modeled response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect touching response, T said, "No! S_1, these are the words push wagon. Touch the words push wagon." as T primed the correct response by guiding S_1's hand until it touched the correct words. T recorded a primed response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect touching response, T said, "No! S_1, these are the words push wagon." as T touched the correct words. T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S had correctly touched each of 11 word cards in response to a verbal and printed cue on two consecutive occasions, without assistance from T.

Phase III, Part 7: When presented with word cards that represent verb-noun phrases, students will visually discriminate one word card in response to the verbal cue "Touch the words push wagon." and will then label the words in response to the verbal cue "What are these words?"

Baseline measures were obtained in a group setting with Ss alternating turns. T placed the 3 of eleven word cards on the table in front of S_1 and said, "S_1, touch the words push wagon." If S_1 touched the correct words, T said, "S_1, what are those words?" If S_1 did not touch the correct words, T said, "Thank you." T recorded the responses without indicating accuracy. Baseline measures were completed when each S had two opportunities to respond to each of 11 word cards.

Teaching Procedures

Step 1 - Ss were seated at the large table in front of T. T placed the 3 of eleven word cards on the table in front of S_1. T said, "S_1, touch the words push wagon." T waited 5-10 seconds and said, "S_1, what are these words?" If S_1 made a correct response, T said, "Good S_1," recorded a correct touching response and a correct labeling response on the data sheet, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect touching response, T said, "No! S_1, touch the words push wagon." as T touched the correct words. T repeated the cue, "S_1, touch the words push wagon." If S_1 made a correct response, T said, "Good touching words push wagon.", recorded an "M" on the data sheet, did not issue a consumable consequence, and proceeded to present the verbal cue, "S_1, what are these words?" If S_1 correctly labeled the word, T recorded a correct response, said, "Good S_1, push wagon." and presented a different verbal cue to S_2, etc.

Step 2b - If S_1 made no response or made an incorrect labeling response, T said, "No!" and repeated the cue, "S_1, touch the words push wagon." If S_1 touched the correct words, T said, "Good S_1, what are these words?" If S_1 made no response or labeled the words incorrectly, T said, "No! S_1, touch the words push wagon." "These are the words push wagon. What are these words?" If S_1 correctly touched the words and labeled the words, T said, "Good S_1," recorded "+/M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3a - If S_1 did not respond or made an incorrect touching response, T said, "No!" repeated the cue, "S_1, touch words push wagon." as T primed the correct response by guiding S_1's hand until it touched the correct words. T said, "S_1, what are these words?" If S_1 responded correctly by labeling the words, T said, "Good S_1, push wagon." recorded a primed touching response and a correct labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3b - If S_1 did not respond or made an incorrect labeling response, T said, "No!" T repeated the verbal cue, "S_1, touch words push wagon." and primed the correct response by guiding S_1's hand until it touched the correct words. T said, "S_1, what are these words?" If S_1 did not label the words or labeled incorrectly, T said, "No!" repeated the verbal cue, "S_1, touch words push wagon." and primed the correct response, T said, "These are words push wagon. What are these words?" If S_1 labeled the words, T said, "Good S_1," recorded a primed touching response and a modeled labeling response, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No S_1. These are words push wagon." as T touched the correct words. T recorded an incorrect response on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

These procedures were implemented until each S had correctly touched and labeled the 11 words in response to verbal cues on two consecutive occasions without assistance from T.

Phase III, Part 8: When presented with word cards that represent verb-noun phrases, students will label the word cards in response to the verbal cue "What are these words?"

Baseline measures were obtained in the following manner: Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what are these words?" If S_1 labeled the word correctly or incorrectly, T recorded the responses without indicating accuracy by following the responses with a neutrally spoken "Thank you." T then presented a different cue to S_2, etc. Baseline measures were concluded when each of the Ss had two opportunities to respond to 11 word cards presented with the verbal cue, "What are these words?"

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what are these words?" If S_1 made a correct labeling response, T said, "Good S_1," recorded a correct response on the data sheet, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 did not respond or made an incorrect labeling response, T said, "No!" presented the word card and repeated the verbal cue, "S_1, what are these words? These words are push wagon. S_1, what are these words?" If S_1 correctly imitated the verbal model, T said, "Good S_1," recorded a modeled response on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond or made an incorrect labeling response, T said, "No!" presented the word card again, and repeated the cue, "S_1, these words are push wagon. What are these words?" If S_1 correctly imitated the verbal model, T recorded the response "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect labeling response, T said, "No! These words are push wagon.", recorded an incorrect response, and terminated teaching. T presented a different cue to S_2, etc.

Instruction continued until each S had labeled each of the 11 word cards correctly on two consecutive occasions, without assistance from T.

Phase III, Part 9: When presented with word cards that represent verb-noun phrases, students will label the word cards in response to the verbal cue "What are these words?" and then demonstrate comprehension by touching a picture depicting the action described by the verb-noun phrase.

Baseline measures of the Ss' abilities to label the words and touch the correct picture from a set of three pictures were obtained in the following manner: Ss were seated at a table in the Reading Corner. T placed one set of 3 pictures on the chartboard in front of S_1. T presented a word card to S_1 and said, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "S_1, touch it." If S_1 labeled the words incorrectly, T said, "Thank you." If S_1 touched the correct picture, T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T presented a different cue to S_2, etc. The above procedure was implemented until each S had two opportunities to respond on two consecutive occasions to each of 11 word cards and 11 sets of pictures.

Teaching Procedures

Step 1 - Ss were seated at a large table in front of T. One set of 3 picture cards (i.e., ride wagon, push wagon, go wagon) were placed on the chartboard in front of the Ss. T presented a word card to S_1 and said, "S_1, what are these words?" If S_1 made a correct response, T said, "Good S_1. Touch it." If S_1 touched the correct picture, T said, "Wow! Good S_1," recorded a correct labeling response and a correct touching response on the data sheet, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 did not respond or made an incorrect labeling response, T said, "No!" presented the word card and repeated the cue, "S_1, what are these words?" T verbally modeled the correct response, "These are words push wagon." and repeated the cue. If S_1 correctly labeled the words, T smiled, said, "Good S_1," recorded a modeled response on the data sheet, did not issue a consumable consequence, and said, "S_1 touch it." If S_1 touched the correct picture, T smiled, said, "Good S_1," recorded a correct touching response on the data sheet, and presented a different cue to S_2, etc.

Step 2b - If $\underline{S}_1$ labeled the word correctly but did not make a correct touching response, T said, "No!" presented the word card, and repeated the verbal cue, "$\underline{S}_1$, what are these words?" If $\underline{S}_1$ correctly labeled the words, T said, "Good $\underline{S}_1$. Touch it." as T touched the correct picture. T presented the word card and repeated the verbal cue again. If $\underline{S}_1$ labeled the word correctly, T recorded a correct response, and said, "Good $\underline{S}_1$. Touch it." If $\underline{S}_1$ touched the correct picture, T said, "Good $\underline{S}_1$," recorded a modeled response, did not issue a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 3 - If $\underline{S}_1$ made no response or made an incorrect labeling and an incorrect touching response, T said, "No! $\underline{S}_1$." presented the word card and said, "$\underline{S}_1$, these are words push wagon." T touched the correct picture, said, "Push wagon." recorded incorrect labeling and touching responses, did not issue a consumable consequence, and terminated teaching. T presented a new cue to $\underline{S}_2$, etc.

These procedures were implemented until an individual S had correctly labeled and touched each of 11 different word cards and pictures on two consecutive occasions without assistance from T.

Phase III, Part 10: When presented with word cards that represent verb-noun phrases, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by performing the actions the phrases describe.

Baseline measures of each Ss' ability to label the words and perform actions were obtained prior to any baseline or instruction on other Parts. The measures were conducted in a group setting with the Ss alternating turns. Materials were previously placed in the Action Area. T presented a word card and said, "$\underline{S}_1$, what is this word?" T waited 5-10 seconds for $\underline{S}_1$ to respond. If $\underline{S}_1$ labeled the words correctly, T said, "Do it." If $\underline{S}_1$ did not label the words correctly, T said, "Thank you." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were completed when each S had two opportunities to respond to each of 11 word cards.

Teaching Procedures

Step 1 - T placed the objects in the Action Area in the center of the room. Ss were seated at a large table in front of T. T presented a word card to $\underline{S}_1$ and said, "$\underline{S}_1$, what are these words?" T waited 5-10 seconds for $\underline{S}_1$ to respond. If $\underline{S}_1$ correctly labeled the words, T said, "Do it." T recorded a correct labeling response and a correct action response, issued a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 2a - If $\underline{S}_1$ made no response or made an incorrect labeling response, T said, "No!" presented the word card and said, "$\underline{S}_1$, what are these words? These words are push wagon. What are these words?" If $\underline{S}_1$ labeled the words correctly, T said, "Good. Do it." If $\underline{S}_1$ made a correct action response, T said, "Good $\underline{S}_1$," recorded a modeled labeling response and a correct action response, did not issue a consumable, and presented a different cue to $\underline{S}_2$, etc.

Step 2b - If $\underline{S}_1$ made no response or made an incorrect action response, T said, "No!" presented the word card and said, "$\underline{S}_1$, what are these words?" If $\underline{S}_1$ correctly labeled the words, T said, "Good. Look. Do it." as T performed the correct action. T presented the word card again and repeated, "$\underline{S}_1$, what are these words?" If $\underline{S}_1$ labeled the words, T said, "Do it." If $\underline{S}_1$ correctly performed the action, T said, "Good $\underline{S}_1$," recorded a correct labeling response and a modeled action response, did not issue a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 3a - If $\underline{S}_1$ made no response or made an incorrect labeling response, T said, "No! $\underline{S}_1$, the words are push wagon.", recorded an incorrect labeling response, and performed the action. T recorded an incorrect action response, did not issue a consumable consequence, and terminated teaching.

Step 3b - If $\underline{S}_1$ made no response or made an incorrect action response, T said, "No! $\underline{S}_1$, these words are push wagon." as T presented the word card and performed the action. T recorded an incorrect labeling response and an incorrect action response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to $\underline{S}_2$, etc.

These procedures were implemented until each S had correctly labeled each of 11 words, demonstrated the actions on two consecutive occasions without assistance from T.

Phase IV: Teaching students to label printed words that represent selected adjectives and to demonstrate comprehension of the words by touching the adjectives in pictures.

Phase Design: Phase IV consists of eight parts. Part 8 embodies the criterion response. The general design used to teach and verify criterion responding is described in Phase I.

Phase IV, Part 1: When presented with objects (e.g., a red wagon) students will describe the object in response to the verbal cue "What color/size is this?" When presented with a picture depicting a color/size, students will describe the picture in response to the verbal cue "What color/size is this?"

Baseline measures were obtained using the following procedures: Ss were seated at a table in front of T. T placed 8 objects (or 8 picture cards) on the table in front of $\underline{S}_1$, pointed to an object and said, "$\underline{S}_1$, what is this color/size?" If $\underline{S}_1$ responded correctly or incorrectly, T recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you."

T then presented a different object to S_2, etc. This procedure was implemented until each S had two opportunities to label each of 8 objects and 8 picture cards.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T placed 8 objects on the table in front of S_1, pointed to one object and said, "S_1, what is this color/size?" If S_1 made a correct response, T said, "Good S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No!" repeated the cue and verbally modeled the correct response, "This is color red." T repeated the cue, "S_1, what is this color/size?" If S_1 correctly labeled the object's color or size, T recorded "M," said, "Good S_1," did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or an incorrect response T said, "No, this is color red." recorded an incorrect response, and terminated teaching. S_2 was then given a different cue, etc.

These procedures were used for Part 1b, where pictures were substituted for objects. Instruction continued until each S performed correctly on two consecutive trials for both parts 1a and 1b, without assistance from T.

Phase IV, Part 2: When presented with a group of objects, students will visually discriminate (touch) one object (e.g., a red wagon) in response to printed and verbal cues (e.g., The teacher presents the word card red and says "This is the color word red. Touch the color red."). When presented with a picture students will visually discriminate an adjective in that picture in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch the color red.").

Baseline measures were obtained in the following manner: Ss were seated at a table in front of T. T placed 8 objects on the table in front of S_1, presented a word card and said, "S_1, this is the color word red. Touch the color red." If S_1 responded correctly or incorrectly, T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." This procedure was implemented until each S had two opportunities to touch each of the objects in response to the verbal and visual cues.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T placed 8 objects on the table in front of S_1, presented a word card and said, "S_1, this is the color word red. Touch the color red." If S_1 touched the correct color, T smiled, said, "Good touching." issued a consumable consequence, recorded a correct response, and presented a different cue to S_2, etc.

Step 2 - If $\underline{S}_1$ made no response or made an incorrect touching response, T said, "No!" presented the word card, repeated the cue, "$\underline{S}_1$, this is the color word red. Touch the color red." and modeled the correct response by touching the correct word. T presented the word card and repeated the cue. If $\underline{S}_1$ touched the correct color/size, T smiled, said, "Good touching," recorded "M" on the data sheet, did not deliver a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 3 - If $\underline{S}_1$ made no response or made an incorrect touching response, T said, "No!" presented the word card, repeated "$\underline{S}_1$, this is the color word red. Touch the color red." and primed the correct response by guiding $\underline{S}_1$'s hand until it touched the correct object. T recorded "P" on the data sheet, did not deliver a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 4 - If $\underline{S}_1$ made no response or made an incorrect response T said, "No!" presented the word card and said, "This is the color word red. Touch the color red." as T touched the correct object. T recorded an incorrect response, did not deliver a consumable consequence, and terminated teaching. T presented a different cue to $\underline{S}_2$, etc.

These procedures were followed until each S touched the correct colors and sizes on two consecutive occasions, and without assistance from T.

These procedures were implemented for Parts 2a and 2b.

Phase IV, Part 3: When presented with a group of objects and with corresponding word cards in front of the objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch the color word red.").

Baseline measures were obtained using the following procedure: Ss were seated at a table in front of T. T placed 8 objects and the corresponding word cards for each object on the table in front of $\underline{S}_1$. T presented a word card and said, "$\underline{S}_1$, this is the color word red. Touch another word red." If $\underline{S}_1$ touched the correct word or did not touch the correct word, T recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T presented a different word card to $\underline{S}_2$, etc. When each S had two opportunities to touch each of 8 word cards, baseline measures were concluded.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T placed 8 objects and the corresponding word card for each object on the table in front of $\underline{S}_1$. T presented a word card and said, "$\underline{S}_1$, this is the color word red. Touch another word red." If $\underline{S}_1$ touched the correct word card, T smiled, said, "Good touching the color word red." issued a consumable consequence, recorded a correct response, and presented a different verbal and visual word cue to $\underline{S}_2$, etc.

Step 2 - If S_1 made no response or made an incorrect touching response, *T* said, "No!" presented the word card again and said, "S_1, this is the color word *red*. Touch another word *red*." as *T* touched the correct word. *T* presented the word card again and repeated the cue, "S_1, this is the color word *red*. Touch another word *red*." If S_1 touched the correct word card, *T* smiled, said, "Good touching the color word *red*." recorded "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, *T* said, "No!" presented the word card, said "S_1, this is the color word *red*. Touch another word *red*." and primed the correct response by guiding S_1's hand until it touched the correct word card. *T* recorded the response "P" on the data sheet, did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, *T* said, "No!" presented the word card and said, "S_1, this is the color word *red*. Touch another word *red*." as *T* touched the color word. *T* recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. *T* presented a different cue to S_2, etc.

These procedures were followed until each *S* had touched the 8 word cards correctly on two consecutive occasions, without assistance from *T*.

Phase IV, Part 4: *When presented with words that describe objects, students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents the word card red and says, "This is the color word red. Touch another color word red.")*.

Baseline measures were obtained as follows: *S*s were seated at a table in front of *T*. *T* placed 8 word cards on the table in front of S_1. *T* presented a word card and said, "S_1, this is the color word *red*. Touch another color word *red*." If S_1 responded correctly or incorrectly, *T* recorded the responses without indicating accuracy. All responses were followed with the neutrally spoken "Thank you." *T* presented a different word to S_2, etc. Baseline measures were concluded when each *S* had two opportunities to touch each of 8 word cards in response to verbal and visual cues.

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. *T* placed 8 word cards in a row in front of S_1. *T* presented a word card and said, "S_1, this is the color word *red*. Touch another color word *red*." If S_1 touched the correct word, *T* smiled, said, "Good touching the color word *red*." issued a consumable consequence, recorded a correct response, and presented a different cue to S_2, etc.

Step 2 - If S_1 did not make a response or made an incorrect touching response, *T* said, "No!" presented the word card and said, "S_1, this is the color word *red*. Touch another color word *red*." and modeled the response by touching the correct word. *T* again presented the word card and repeated the verbal cue, "S_1, this is the color word *red*. Touch another color word *red*." If S_1 touched the correct word, *T* smiled, said, "Good touching the color word *red*." recorded "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect touching response, *T* said, "No!" presented the word card and repeated the cue, "S_1, this is the color word *red*. Touch another color word *red*." as *T* physically primed the correct response by guiding S_1's hand until it touched the correct word card. *T* said,"This is the color word *red*. S_1, touch another color word *red*." recorded the response "P" on the data sheet, did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, *T* said, "No!" presented the word card and said, "This is the color word *red*. Touch another color word *red*.", as *T* touched the correct word. *T* recorded an incorrect response, did not issue a consumable consequence, and terminated teaching.

These procedures were followed until each *S* touched each of 8 word cards correctly in response to visual and verbal cues on two consecutive occasions, without assistance from *T*.

Phase IV, Part 5: *When presented with words that describe objects, students will visually discriminate words in response to the verbal cue "Touch the color word red." and will label the words in response to the verbal cue "What is this color/size word?"*

Baseline measures were obtained using the following procedure: *S*s were seated at a table in front of *T*. *T* placed the 8 word cards on the table in front of S_1 and said, "S_1, touch the color word *red*." If S_1 touched the correct word, *T* said, "What is this color word?" If S_1 did not touch the correct word, *T* said, "Thank you." *T* recorded the responses without indicating accuracy. All responses were followed with the neutrally spoken "Thank you." *T* presented a different verbal cue to S_2, etc. When each *S* had two opportunities to touch and label each of 8 word cards, baseline measures were concluded.

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T* *T* placed the 8 word cards in a row in front of S_1. *T* said, "S_1, touch the color word *red*." If S_1 touched the correct word, *T* smiled and said,"Good S_1, what is this color word?" If S_1 made a correct touching and labeling response, *T* said, "Good S_1," recorded correct responses, issued a consumable consequence, and presented a different verbal cue to S_2, etc.

Step 2a - If S_1 did not respond or made an incorrect touching response, *T* said, "No! S_1, touch the color word *red*." as *T* modeled the response by touching the correct word. *T* repeated the verbal cue, "S_1, touch the color word *red*." If S_1 touched the correct word, *T* smiled, said, "Good touching the color word *red*," recorded "M" on the data sheet, did not issue a consumable consequence, and said, "What is this color word?" If S_1 labeled the word correctly, *T* recorded a correct response, and said, "Good S_1, *red*." *T* presented a different verbal cue to S_2, etc.

Step 2b - If S_1 did not respond or made an incorrect labeling response, *T* said, "No!" and repeated the cue, "S_1 touch color word *red*." If S_1 touched the correct word, *T* said, "Good S_1, what is this color word?" If S_1 made no response or responded incorrectly, *T* said, "No! S_1, touch the color word *red*. This is the color word *red*. What is this color word?" If S_1 correctly labeled the word, *T* said, "Good, *red*." recorded a correct touching response and an incorrect labeling response on the data sheet, did not issue a consumable, and presented a different cue to S_2, etc.

Step 3a - If S_1 did not respond or made an incorrect touching response, *T* said, "No!" repeated the verbal cue, "S_1, touch the color word *red*." as *T* primed the correct response by guiding S_1's hand until it touched the correct word. *T* said, "S_1, what is this color word?" If S_1 correctly labeled the word, *T* said, "Good S_1," recorded a primed touching response and a correct labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3b - If S_1 did not respond or made an incorrect labeling response, *T* said, "No!" repeated the verbal cue, "S_1, touch the color word *red*." as *T* primed the correct response by guiding S_1's hand to the correct word. *T* said, "S_1, what is this color word?" If S_1 did not respond or responded incorrectly, *T* said, "No!" *T* repeated the verbal cue, "S_1, touch the color word *red*." as *T* primed the correct response. *T* said, "This color word is *red*. What is this color word?" If S_1 labeled the word correctly, *T* said, "Good S_1," recorded a primed touching response and a modeled labeling response, and presented a different verbal cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect response, *T* said, "No! S_1, this is the color word *red*." as *T* touched the color word *red*. *T* recorded incorrect responses, did not issue a consumable consequence, and terminated teaching. *T* presented a different verbal cue to S_2, etc.

These procedures were implemented until each *S* correctly touched and labeled each of 8 word cards on two consecutive occasions without assistance from *T*.

Phase IV, Part 6: *When presented with words that describe objects, students will label the words in response to the verbal cue "What is this color/size word?"*

Baseline measures were obtained using the following procedures: Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what is this color/size word?" T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 8 color and size word cards in response to the verbal cue, "What is this color/size word?"

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what is this color/size word?" If S_1 labeled the word correctly, T said, "Good S_1," recorded a correct response on the data sheet, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 did not make a response or made an incorrect response, T said, "No!" T presented the word card and repeated the verbal cue, "S_1, what is this color/size word? This is the color word red. S_1, what is this color/size word?" If S_1 labeled the word correctly, T said, "Good labeling S_1," recorded "M" on the data sheet, did not issue a consumable, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not make a response or made an incorrect response, T said, "No!" presented the word card again and repeated the verbal cue, "S_1, this is the color word red. What is this color word?" If S_1 labeled the word correctly, T recorded the response "M_2." T presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect response, T said, "No, this is the color word red.", recorded an incorrect response, and terminated teaching. S_2 was then given a different cue, etc.

These procedures were followed until each S labeled each of 8 words correctly on two consecutive occasions without assistance from T.

Phase IV, Part 7: When presented with words that describe objects, students will label words in response to the verbal cue "What is this color/size word?" and will demonstrate comprehension by touching an object which contains the adjective in response to the verbal cue "Touch it."

Baseline measures were obtained using the following procedure: Ss were seated at a table in front of T. T placed 8 objects on the table in front of S_1, presented a word card and said, "S_1, what is this color/size word?" If S_1 labeled the word correctly, T said, "S_1, touch it." If S_1 did not label the word correctly, T said, "Thank you." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." This procedure was implemented until each S had two opportunities to label each of 8 word cards and touch the correct object in response to verbal and visual cues.

Teaching Procedures

Step 1 - $\underline{S}$s were seated at a table in front of $\underline{T}$. Five objects were placed on the table in front of $\underline{S}_1$. $\underline{T}$ presented a word card and said, "$\underline{S}_1$, what is this color/size word?" If $\underline{S}_1$ labeled the word correctly, $\underline{T}$ said, "Touch it." If $\underline{S}_1$ touched the correct object, $\underline{T}$ said, "Good $\underline{S}_1$," issued a consumable consequence, recorded a correct labeling response and a correct touching response, and presented a different verbal cue to $\underline{S}_2$, etc.

Step 2a - If $\underline{S}_1$ did not make a response or made an incorrect word labeling response, $\underline{T}$ said, "No!" presented the word card, repeated the cue, "$\underline{S}_1$, what is this color/size word?" and verbally modeled the correct response, "This is the color word red." $\underline{T}$ repeated the cue, "$\underline{S}_1$, what is this color/size word?" If $\underline{S}_1$ labeled the word correctly, $\underline{T}$ smiled, said, "Good," recorded "M" on the data sheet, did not deliver a consumable consequence, and said, "$\underline{S}_1$, touch it." If $\underline{S}_1$ touched the correct object, $\underline{T}$ smiled, said, "Good $\underline{S}_1$," recorded a correct response on the data sheet, and presented a different cue to $\underline{S}_2$, etc.

Step 2b - If $\underline{S}_1$ labeled the word correctly but did not make a correct touching response, $\underline{T}$ said, "No!" presented the word card and repeated the verbal cue, "$\underline{S}_1$, what is this color/size word?" If $\underline{S}_1$ correctly labeled the word, $\underline{T}$ said, "Good," recorded a correct response and said, "Touch it." as $\underline{T}$ modeled the correct touching response. $\underline{T}$ presented the word card and repeated the verbal cue, "$\underline{S}_1$, what is this color/size word?" If $\underline{S}_1$ correctly labeled the word, $\underline{T}$ recorded a correct response, said, "Good. Touch it." If $\underline{S}_1$ touched the correct object, $\underline{T}$ said, "Good," recorded an "M," did not issue a consumable, and presented a different cue to $\underline{S}_2$, etc.

Step 3 - If $\underline{S}_1$ did not respond or made an incorrect response, $\underline{T}$ said, "No! The color word is red." and touched the correct object. $\underline{T}$ recorded incorrect responses, did not issue a consumable consequence, and terminated teaching.

These procedures were implemented until each $\underline{S}$ labeled each of 8 word cards and touched the objects correctly on two consecutive occasions without assistance from $\underline{T}$.

Phase IV, Part 8: When presented with words that describe objects, students will label the words in response to the verbal cues "What is this color/size word?" and will demonstrate comprehension by touching a picture containing the adjective in response to the verbal cue "Touch it."

Baseline measures of each $\underline{S}$s ability to label the words and touch the correct picture were obtained in the following manner: $\underline{S}$s were seated at a table in front of $\underline{T}$. $\underline{T}$ placed one picture card with 3 pictures on it in front of $\underline{S}_1$. $\underline{T}$ presented a word card and said, "$\underline{S}_1$, what is this color/size word?" If $\underline{S}_1$ labeled the word, $\underline{T}$ said, "Touch it." If $\underline{S}_1$ did not label the word correctly, T said, "Thank you." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T then presented a different cue to S_2, etc. This procedure was implemented until each S had two opportunities to label each of 8 word cards and touch the corresponding correct pictures in response to visual and verbal cues.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. A set of picture cards was placed on the chartboard in front of S_1. T presented a word card and said, "S_1, what is this color/size word?" If S_1 labeled the words, T said, "Touch it." If S_1 touched the correct pictures, T said, "Good S_1," issued a consumable consequence, recorded a correct labeling response and a correct touching response, and presented a different cue to S_2, etc.

Step 2a - If S_1 did not make a response or made an incorrect word labeling response, T said, "No!" presented the word card and repeated the cue, "S_1, what is this color/size word?" and verbally modeled the correct response "Red. This is the color word red." T repeated the cue. If S_1 labeled the word correctly, T smiled, said "Good," recorded an "M" on the data sheet, did not deliver a consumable consequence, and said, "S_1, touch it." If S_1 touched the correct picture, T smiled, said, "Good S_1," recorded a correct response on the data sheet, and presented a different cue to S_2, etc.

Step 2b - If S_1 labeled the word correctly but did not make a correct touching response, T said, "No!" presented the word card and repeated the verbal cue, "S_1, what is this color/size word?" If S_1 correctly labeled the word, T said, "Good," recorded a correct labeling response, and said "Touch it." as T modeled the correct touching response. T presented the word card and repeated the verbal cue, "S_1, what is this color/size word?" If S_1 correctly labeled the word, T recorded a correct labeling response and said, "Good, touch it." If S_1 touched the correct picture, T said, "Good," recorded an "M", did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No! S_1, this is the color word red." and touched the correct color. T recorded incorrect responses, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were followed until each S labeled each of 8 word cards and touched the correct pictures on two consecutive occasions without assistance from T.

Phase V: Teaching students to label printed words that represent selected adjective noun phrases (e.g., red wagon) and to demonstrate comprehension of the printed words by touching pictures of adjective noun phrases.

Phase Design: Phase V combined the elements of Phase I and Phase IV and consists of eight parts. Part 8 embodies the criterion response. The design used to teach and verify criterion responding is described in Phase I.

Phase V, Part 1: When presented with objects (e.g., red wagon) and pictures that depict those objects, students will label the objects and pictures with adjective noun phrases in response to the verbal cue "What is this?"

Baseline measures were obtained in the following manner: Ss were seated at a large table in front of T. T placed an object in front of each S and alternated the verbal cue, "S_1, what is this?" as T pointed to an object. T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 10 objects.

Teaching Procedures

Step 1 - The Ss were seated at a large table in the Reading Corner. T placed an object in front of each S and alternated the verbal cue, "S_1, what is this?" If S_1 labeled the object using an adjective noun phrase, T said, "Good S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No!" repeated the cue, and verbally modeled the correct response, "This is red wagon." T repeated the cue, "S_1, what is this?" If S_1 correctly labeled the object, T recorded a modeled response on the data sheet, said "Good S_1," did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No! S_1, this is a red wagon.", recorded an incorrect response, and terminated teaching. S_2 was then given a different cue, etc.

Implementation of these procedures continued until each S correctly labeled 10 objects on two consecutive occasions without assistance from T. These procedures were then used with pictures of the objects.

Phase V, Part 2: When presented with objects and pictures, students will visually discriminate (touch) objects or pictures in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch a red wagon.").

Baseline measures were obtained using the following procedures: Ss were seated at a table in the Reading Corner. T placed a set of 5 objects on the table in front of Ss. T presented a word card and said, "S_1, these are the words red wagon. Touch a red wagon." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you."

This procedure was implemented until each S had two consecutive opportunities to touch each object in response to the visual and verbal cues.

Teaching Procedures

Step 1 - Ss were seated at a table in the Reading Corner. T placed 5 objects on the table. T presented a word card and said, "S_1, these are the words red wagon. Touch a red wagon." If S_1 touched the correct object, T said, "Wow!" recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect touching response, T said, "No!" presented the word card again, and said, "S_1, these are the words red wagon. Touch a red wagon." as T modeled the correct touching response. T presented the word card and repeated the cue. If S_1 correctly touched the object, T smiled and said, "Good S_1," recorded an "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No!" presented the word card, said "S_1, these are the words red wagon. Touch a red wagon." and primed the response by guiding S_1's hand until it touched the correct object. T recorded a primed response on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No!" presented the word card, said "These are the words red wagon." and touched the object. T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

Implementation of these procedures continued until each S correctly touched each of 10 objects on two consecutive occasions without assistance from T.

Phase V, Part 3: When presented with pictures and with corresponding printed words in front of the pictures, students will visually discriminate word cards in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch the words red wagon.").

Baseline measures were obtained using the following procedure: Ss were seated at the chartboard in the Reading Corner in front of T. T placed 3 pictures and corresponding word cards in the lower left hand corner of the picture on the chartboard. T presented another word card and said, "S_1, these are the words red wagon. Touch the words red wagon." T recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." When each S had two opportunities to touch each of 10 word cards, baseline measures were concluded.

Teaching Procedures

Step 1 - Ss were seated at the chartboard in the Reading Corner. T placed 3 pictures and corresponding word cards in the lower left hand corner of the picture on the chartboard. T presented another word card and said, "S_1, these are the words red wagon. Touch the words red wagon." If S_1 touched the correct words, T smiled, said, "Good job S_1," recorded a correct touching response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, T said, "No!" presented the word card again, and said, "These are the words red wagon. Touch the words red wagon." as T touched the correct words. T presented the word card, and repeated the verbal cue. If S_1 touched the correct words, T said, "Good S_1," recorded an "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No!" T presented the word card, said, "S_1, these are the words red wagon. Touch the words red wagon." and primed the response by guiding S_1's hand until it touched the correct card. T recorded a "P," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No! These are the words red wagon. Touch the words red wagon." as T touched the correct words. T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S touched 10 word cards correctly on two consecutive occasions in response to a visual and a verbal word cue without assistance from T.

Phase V, Part 4: When presented with word cards, students will visually discriminate appropriate word cards in response to printed and verbal cues (e.g., The teacher presents the word card red wagon and says, "These are the words red wagon. Touch the words red wagon.").

Baseline measures were obtained in the following manner: Ss were seated at the chartboard in the Reading Corner. T placed 5 word cards on the chartboard. T presented another word card and said, "S_1, these are the words red wagon. Touch the words red wagon." T recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to touch each of 10 word cards.

Teaching Procedures

Step 1 - Ss were seated at the chartboard in the Reading Corner. T placed 5 word cards on the chartboard, presented another word card and said, "$\underline{S}_1$, these are the words red wagon. Touch the words red wagon." If $\underline{S}_1$ made a correct response, T said, "Wow! Good $\underline{S}_1$," recorded a correct response, issued a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 2 - If $\underline{S}_1$ made no response or made an incorrect response, T said, "No!" presented the word card, said, "$\underline{S}_1$, these are the words red wagon. Touch the words red wagon." and modeled the correct touching response. T repeated the cue. If $\underline{S}_1$ touched the correct words, T said, "Good," recorded an "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 3 - If $\underline{S}_1$ made no response or made an incorrect response, T said, "No!" presented the word card, said, "$\underline{S}_1$, these are the words red wagon. Touch the words red wagon." and primed the correct response by guiding $\underline{S}_1$'s hand until it touched the correct words. T recorded a "P" on the data sheet, did not issue a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 4 - If $\underline{S}_1$ made no response or made an incorrect response, T said, "No! $\underline{S}_1$, these are the words red wagon. Touch the words red wagon." and T touched the correct words. T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to $\underline{S}_2$, etc.

These procedures were implemented until each S touched each of 10 word cards correctly on two consecutive occasions without assistance from T.

Phase V, Part 5: When presented with word cards containing adjective noun phrases, students will visually discriminate a word card in response to the verbal cue "Touch the words red wagon." and students will label the words in response to the verbal cue "What are those words?"

Baseline measures of S's ability to touch and label the words were obtained using the following procedure: Ss were seated at the chartboard in the Reading Corner. T placed 5 word cards on the chartboard and said, "$\underline{S}_1$, touch the words red wagon." If $\underline{S}_1$ touched the correct words, T said, "$\underline{S}_1$, what are these words?" If $\underline{S}_1$ did not touch the correct words, T said, "Thank you." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to touch and label each of 10 printed word cards in response to verbal cues.

Teaching Procedures

Step 1 - Ss were seated at a chartboard in front of T. T placed the 5 word cards on the chartboard and said, "$\underline{S}_1$, touch the words red wagon." If $\underline{S}_1$ correctly responded, T smiled, said, "Good $\underline{S}_1$, what are these words?" If $\underline{S}_1$ made a correct labeling response, T said, "Good $\underline{S}_1$," recorded a correct touching response and a correct labeling response, issued a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 2a - If S_1 did not respond or made an incorrect touching response, *T* said, "No! S_1, touch the words *red wagon*." as *T* modeled the response by touching the correct words. *T* repeated the verbal cue, "S_1, touch the words *red wagon*." If S_1 touched the correct words, *T* smiled, said, "Good touching the words *red wagon*.", recorded "M" on the data sheet, did not issue a consumable consequence and said, "What are these words?" If S_1 labeled the words, *T* recorded a correct response, said, "Good S_1, *red wagon*." and presented a different cue to S_2, etc.

Step 2b - If S_1 did not respond or made an incorrect labeling response, *T* said, "No!" and repeated the cue, "S_1, touch the words *red wagon*." If S_1 correctly responded, *T* said, "Good S_1, what are these words?" If S_1 made no response or responded incorrectly, *T* said, "No! S_1, touch the words *red wagon*. These are the words *red wagon*. What are these words?" If S_1 correctly labeled the words, *T* said, "Good, *red wagon*.", recorded a correct touching response and a modeled labeling response on the data sheet, did not issue a consumable, and presented a different cue to S_2, etc.

Step 3a - If S_1 did not respond or made an incorrect touching response, *T* said, "No!" repeated the verbal cue, "S_1, touch the words *red wagon*." and primed the correct response by guiding S_1's hand until it touched the correct words. *T* said, "S_1, what are these words?" If S_1 responded correctly by labeling the words, *T* said, "Good," recorded a primed touching response and a correct labeling response, did not issue a consumable consequence and presented a different cue to S_2, etc.

Step 3b - If S_1 did not respond or made an incorrect labeling response, *T* said, "No!" repeated the verbal cue, "S_1, touch the words *red wagon*." and primed the correct response by guiding S_1's hand until it touched the correct words. *T* said, "S_1, what are these words?" If S_1 did not respond or responded incorrectly, *T* said, "No!" and repeated the verbal cue, "S_1, touch the words *red wagon*." *T* primed the correct response and said, "These words are *red wagon*. What are these words?" If S_1 labeled the words, *T* said, "Good S_1," recorded a primed touching response and a modeled labeling response, and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect response *T* said, "No! S_1, these are the words *red wagon*." and *T* touched the words *red wagon*. *T* recorded incorrect responses, did not issue a consumable consequence, and terminated teaching. *T* presented a different cue to S_2, etc.

These procedures were followed until each *S* correctly touched and labeled each of 10 word cards on two consecutive occasions without assistance from *T*.

Phase V, Part 6: *When presented with word cards containing adjective noun phrases, students will label the words in response to the verbal cue, "What are these words?"*

Baseline measures were obtained in the following manner: Ss were seated at the table in the Reading Corner in front of T. T presented 26 word cards in rotation. T presented one word card and said, "S_1, what are these words?" T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 26 word cards.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what are these words?" If S_1 labeled the words, T said, "Good S_1," recorded a correct response on the data sheet, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 did not make a response or made an incorrect response, T said, "No!" presented the word card and repeated the verbal cue, "S_1, what are these words? These are words red wagon. S_1, what are these words?" If S_1 labeled the words, T said, "Good labeling S_1," recorded "M" on the data sheet, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not make a response or responded incorrectly, T said, "No!" presented the word card again and repeated the verbal cue, "S_1, these are words red wagon. What are these words?" If S_1 labeled the words correctly, T recorded the response "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect response, T said, "No! These are the words red wagon." recorded an incorrect response, and terminated teaching. S_2 was then given a different cue, etc.

These procedures were followed until each S correctly labeled each of 26 word cards on two consecutive occasions without assistance from T.

Phase V, Part 7: When presented with word cards containing adjective-noun phrases, students will label the words in response to the verbal cue "What are these words?" and will demonstrate comprehension by touching an object represented by the adjective-noun phrase, in response to the verbal cue "Touch it."

Baseline measures were obtained using the following procedure: Ss were seated at a table in the Reading Corner in front of T. T placed several objects on the table in front of Ss. T presented a word card and said, "S_1, what are these words?" T waited 5-10 seconds. If S_1 labeled the word correctly, T said, "Thank you." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." This procedure was implemented until each S had two opportunities to label each of 26 word cards and touch the correlated objects.

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. Five objects were placed on the table in front of S_1. *T* presented a word card and said, "S_1, what are these words?" If S_1 labeled the words, *T* said, "Touch it." If S_1 touched the correct object, *T* said, "Good S_1," issued a consumable consequence, recorded a correct labeling response and a correct touching response, and presented a different cue to S_2, etc.

Step 2a - If S_1 did not make a response or made an incorrect labeling response, *T* said, "No!" presented the word card again, repeated the cue,"S_1, what are these words?" and verbally modeled the correct response, "These are the words *red wagon*." *T* repeated the cue, "S_1, what are these words?" If S_1 correctly labeled the words, *T* smiled, said, "Good," recorded a modeled labeling response on the data sheet, did not deliver a consumable consequence and said,"S_1, touch it." If S_1 touched the correct object, *T* smiled and said, "Good S_1," recorded a correct touching response on the data sheet, and presented a different cue to S_2, etc.

Step 2b - If S_1 labeled the word correctly but did not make a correct touching response, *T* said, "No!" presented the word card and repeated the verbal cue, "S_1, what are these words?" If S_1 correctly labeled the words, *T* said, "Good," recorded a correct response, said,"Touch it." and modeled the correct touching response. *T* presented the word card and repeated the verbal cue, "S_1, what are these words?" If S_1 correctly labeled the word, *T* recorded a correct labeling response and said,"Good, touch it." If S_1 touched the correct object, *T* said, "Good," recorded an "M," did not issue a consumable, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond or made incorrect labeling and touching responses, *T* said, "No! These are the words *red wagon*. What are these words?" If S_1 correctly labeled the words, *T* smiled, said, "Good," recorded "M_2" on the data sheet, did not deliver a consumable consequence,and said, "S_1, touch it." as *T* touched the correct object. *T* said, "What are these words?" If S_1 labeled the words correctly, *T* said,"Touch it." If S_1 touched the correct object, *T* said, "Good," recorded "M_2" touching response,and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect response, *T* said, "No! These are the words *red wagon*." and touched the correct object. *T* recorded incorrect responses, did not issue a consumable consequence, and terminated teaching.

These procedures were followed until each *S* correctly labeled and touched each of 26 word cards and objects on two consecutive occasions without assistance from *T*.

Phase V, Part 8: When presented with word cards containing adjective-noun phrases, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching a picture representing the adjective-noun phrase in response to the verbal cue "Touch it."

Baseline measures of S's abilities to label word cards and touch the correlated pictures were obtained using the following procedure: Ss were seated at the chartboard in the Reading Corner. T placed 3 pictures on the chartboard and placed one word card under the pictures. T said, "S_1, what are these words?" T waited 5-10 seconds. If S_1 labeled the words correctly, T said, "Touch it." If S_1 did not label the words correctly, T said, "Thank you." T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." This procedure was implemented until each S had two opportunities to label each of 26 word cards and touch correlated pictures in response to verbal cues.

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. A set of picture cards was placed on the chartboard in front of S_1. T presented a word card and said, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "Touch it." If S_1 touched the correct picture, T said, "Good S_1," issued a consumable consequence, recorded a correct labeling response and a correct touching response, and presented a different cue to S_2, etc.

Step 2a - If S_1 did not make a response or made an incorrect labeling response, T said, "No!" presented the word card again, repeated the cue, "S_1, what are these words?" and verbally modeled the correct response "These are the words red wagon." T repeated the cue. If S_1 labeled the words correctly, T smiled, said, "Good," recorded an "M" on the data sheet, did not deliver a consumable consequence, and said, "S_1, touch it." If S_1 responded correctly, T smiled, said, "Good S_1," recorded a correct touching response on the data sheet and presented a different cue to S_2, etc.

Step 2b - If S_1 labeled the word correctly but did not make a correct touching response, T said, "No!" presented the word card and repeated the verbal cue, "S_1, what are these words?" If S_1 correctly labeled the words, T said, "Good," recorded a correct labeling response, said "Touch it." and modeled the correct touching response. T presented the word card and repeated the verbal cue, "S_1, what are these words?" If S_1 correctly labeled the words, T said, "Good, touch it." If S_1 touched the correct picture, T said, "Good," recorded an "M," did not issue a consumable, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, T said, "No! S_1, these are the words red wagon." and touched the correct picture. T recorded incorrect responses, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2.

These procedures were implemented until each *S* correctly labeled each of 26 word cards and touched the correlated pictures on two consecutive occasions without assistance from *T*.

Phase VI: *Teaching students to label printed words that represent selected direct commands (e.g., bounce red ball) and to demonstrate comprehension of those printed words by performing the directed actions*.

Phase Design: Phase VI consists of five parts. Part 5 embodies the criterion responses. The general design used to teach and verify criterion responding is described in Phase I.

Phase VI, Part 1: *When presented with word cards that represent direct commands, students will visually discriminate (touch) word cards in response to printed and verbal cues (e.g., The teacher presents the word card push red wagon and says, "These are words push red wagon. Touch the words push red wagon.")*.

Baseline measures were obtained as follows: *S*s were seated at a chartboard. *T* placed 5 word cards on the chartboard, presented a word card and said, "S_1, these are the words *push* *red* *wagon*. Touch the words *push* *red* *wagon*." *T* recorded responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each *S* had two opportunities to touch each of 10 word cards in response to verbal and printed cues.

Teaching Procedures

Step 1 - *S*s were seated at the chartboard. *T* placed 5 word cards on the chartboard, presented a word card and said, "S_1, these are the words *push* *red* *wagon*. Touch the words *push* *red* *wagon*." If S_1 touched the correct words, *T* said, "Good S_1," recorded a correct touching response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect touching response, *T* said, "No! S_1, these are the words *push* *red* *wagon*. Touch the words *push* *red* *wagon*." as *T* touched the correct words. *T* presented the words *push* *red* *wagon* again, and said, "S_1, these are the words *push* *red* *wagon*. Touch the words *push* *red* *wagon*." If S_1 touched the correct words, *T* recorded an "M," said "Good S_1," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect touching response, *T* said, "No!" presented the word card again, and said, "S_1, these are the words *push* *red* *wagon*. Touch the words *push* *red* *wagon*." as *T* primed the touching response by guiding S_1's hand until it touched the correct words. *T* recorded a "P," said "Good S_1," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect touching response, T touched the correct word card, and said, "No! S_1, these are the words push red wagon." T recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S correctly touched each of 10 word cards on two consecutive occasions without assistance from T.

Phase VI, Part 2: When presented with word cards that contain direct commands, students will visually discriminate word cards in response to a verbal cue (e.g., "Touch the words push red wagon.") and will label the words in response to the verbal cue "What are those words?"

Baseline measures were obtained as follows: Ss were seated at the chartboard. T placed 5 sentence word cards in the chartboard and said, "S_1, touch the words push red wagon." If S_1 touched the correct sentence, T said, "What are these words?" T waited 5-10 seconds for S_1 to reply. If S_1 did not touch the correct sentence, T said, "Thank you." T recorded two responses, the touching response and the labeling response without indicating accuracy. All of the responses were followed by the neutrally spoken "Thank you." This procedure was implemented until each S had two opportunities to touch and label each of 10 sentences.

Teaching Procedures

Step 1 - Ss were seated in front of the chartboard. T placed 5 sentence word cards on the chartboard and said, "S_1, touch the words push red wagon." If S_1 touched the correct sentence, T said, "Good S_1, what are these words?" If S_1 verbally labeled the sentence, T recorded a correct touching response and a correct labeling response, smiled and said, "Good S_1," issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 did not respond or made an incorrect touching response, T said, "No!" repeated the cue, "S_1, touch the words push red wagon." and touched the correct sentence. T then repeated the cue, "S_1, touch the words push red wagon." If S_1 touched the correct sentence, T smiled, said, "Good touching words push red wagon." recorded "M," and said, "S_1, what are these words?" If S_1 responded correctly, T said, "Good S_1," recorded a correct labeling response, did not issue a consumable consequence and presented a different cue to S_2, etc. If S_1 incorrectly labeled the sentence, T said, "No! These words are push red wagon. What are these words?" If S_1 labeled the words correctly, T said, "Good S_1," recorded "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond or made an incorrect touching response, T said, "No!" repeated the cue, "S_1, touch the words push red wagon." and guided S_1's hand until it touched the correct sentence. T said, "Good touching," recorded "P," and said, "S_1, what is this sentence?" If S_1 labeled the sentence, T recorded a correct response and presented a different sentence cue to S_2. If S_1 labeled the sentence incorrectly, T said, "No! These are the words push red wagon. Touch the words push red wagon." as T primed the touching response. T then repeated the cue. "What are these words?" If S_1 correctly labeled the words, T said, "Good S_1," recorded a primed touching response and a modeled labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or responded incorrectly, T said, "No!" and touched the correct word card. T said, "These are words push red wagon." T recorded incorrect touching and labeling responses, and presented a different cue to S_2, etc.

These procedures were implemented until each S correctly touched and labeled each of 10 sentence word cards on two consecutive occasions without assistance from T.

Phase VI, Part 3: When presented with word cards that contain direct commands, students will label the words in response to the verbal cue, "What are these words?"

Baseline measures were obtained as follows: Ss were seated in front of the chartboard in the Reading Corner. T placed a set of 5 sentences on the chartboard. T pointed to one sentence word card and said, "S_1, what are these words?" T waited 5-10 seconds for S_1 to respond. T recorded the responses without indicating accuracy, and replied with the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 10 sentence word cards.

Teaching Procedures

Step 1 - T placed 5 sentence word cards on a chartboard in front of Ss. T pointed to one sentence word card and said, "S_1, what are these words?" T waited 5-10 seconds. If S_1 correctly labeled the sentence, T recorded a correct response, issued a consumable consequence, and said, "Good reading S_1," and presented a different cue to S_2, etc.

Step 2 - If S_1 did not make a response or made an incorrect labeling response, T said, "No! These words are push red wagon. What are these words?" If S_1 labeled the words correctly, T said, "Good S_1," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not make a response or made an incorrect labeling response, T said, "No! These words are push red wagon." T recorded an incorrect response, did not issue a consumable consequence, and presented S_2 with a different cue, etc.

These procedures were implemented until each S correctly labeled each of 10 sentence word cards on two consecutive occasions without assistance from T.

Phase VI, Part 4: When presented with word cards that contain direct commands, students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching a picture that represents the direct command in response to the verbal cue "Touch a picture of it."

Baseline measures of the Ss' abilities to label the sentences and touch appropriate pictures were obtained as follows: Ss were seated at the chartboard in front of T. T placed 5 picture cards on the chartboard in front of Ss, and placed one word card above the picture and said, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "Touch it." If S_1 touched the appropriate picture, T recorded the responses. If S_1 did not label the words correctly, T said, "Thank you," recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T then presented a different cue to S_2, etc. This procedure was implemented until each S had two opportunities to label each of 10 word cards and touch correlated pictures.

Teaching Procedures

Step 1 - Ss were seated at the chartboard in front of T. T placed 5 picture cards on the chartboard, placed one word card above the pictures and said, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "Touch it." If S_1 touched the picture, T said, "Good S_1," issued a consumable consequence, recorded a correct labeling response and a correct touching response, and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect labeling response, T said, "No!" presented the sentence card again, repeated the cue, "S_1, what are these words?" and verbally modeled the correct response, "These words are push red wagon." T repeated the cue, "S_1, what are these words?" If S_1 correctly labeled the words, T smiled and said, "Good," recorded "M" on the data sheet, did not deliver a consumable consequence,and said, "S_1, touch it." If S_1 responded correctly, T smiled and said, "Good S_1," recorded a correct touching response,and presented a different cue to S_2, etc.

Step 2b - If S_1 labeled the sentences correctly, but did not make a correct touching response, T said, "No!" presented the sentence card,and repeated the verbal cue, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "Good. Touch it." as T touched the correct picture. T presented the sentence card and repeated the verbal cue, "S_1, what are these words?" If S_1 correctly labeled the words, T recorded a correct labeling response and said, "Good, touch it." If S_1 touched the correct picture, T said, "Good," recorded an "M," did not issue a consumable consequence,and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond correctly or made no response, T said, "No! These are words push red wagon.", touched the correct picture, recorded incorrect responses, and terminated teaching. S_2 was then presented a different sentence word card, etc.

These procedures were followed until each S labeled 10 sentence word cards and touched the correlated pictures on two consecutive occasions without assistance from T.

Phase VI, Part 5: When presented with word cards that contain direct commands, students will label the words in response to the verbal cue, "What are these words?" and demonstrate comprehension by performing appropriate actions in response to the verbal cue "Show me" or "Do it."

Baseline measures were obtained in the following manner: Ss were seated in front of the chartboard. T placed 5 sentence word cards on the chartboard, pointed to one sentence word card and said, "S_1, what are these words?" T waited 5-10 seconds for S_1 to label the words. T followed a correct labeling response with "Show me" or "Do it." If S_1 did not make a correct labeling response, T said "Thank you," recorded the responses without indicating accuracy. T replied with the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 10 sentence word cards and demonstrate appropriate actions.

Teaching Procedures

Step 1 - T placed 5 sentence word cards on the chartboard. T pointed to one sentence word card and said, "S_1, what are these words?" T waited 5-10 seconds. If S_1 responded correctly, T said,"Show me" or "Do it." If S_1 performed the action correctly, T recorded a correct labeling response and a correct action response, issued a consumable consequence,and said "Good job, S_1." T then presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect action response, T said, "No! S_1, read the words again." If S_1 labeled the words correctly and performed the action correctly, T recorded a correct labeling response "+2", a correct action response "+2", issued a consumable consequence, and said, "Good reading S_1." T then presented a different cue to S_2, etc.

Step 2b - If S_1 made no response or made an incorrect labeling response, T marked the missed words and said, "No! Read the sentence again." If S_1 labeled the sentence correctly, T recorded a "+2" labeling response, and said, "S_1, show me or do it." If S_1 performed the action, T recorded a correct action response, said "Good S_1," did not issue a consumable consequence,and presented a different sentence to S_2, etc.

Step 3a - If S_1 made no response or made an incorrect action response, T said, "No! S_1, read the words again." If S_1 correctly labeled the words, T said, "S_1, look. Do it." and T performed the action. T repeated the cue. If S_1 correctly labeled the words, T said, "Do it." If S_1 performed the action correctly, T said, "Good S_1," recorded a "+3" labeling response and an "M" action response, did not issue a consumable, and presented a different cue to S_2, etc.

Step 3b - If S_1 made no response or made an incorrect labeling response, T said, "No! S_1, read the words again." T labeled the words, "These are the words push red wagon." and repeated the cue, "S_1, read the words." If S_1 correctly labeled the words, T said, "Do it." If S_1 made a correct action response, T recorded an "M" labeling response and a "+3" action response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no responses or made incorrect responses, T said, "No! S_1, these words are push red wagon.", recorded an incorrect labeling response and performed the action directed by the sentence. T recorded an incorrect action response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S correctly labeled each of 10 sentences and performed the appropriate actions on two consecutive occasions without assistance from T.

Phase VII: Teaching students to label words that contain selected articles (e.g., a, an, the) and to demonstrate understanding that if an article precedes a noun, the meaning of the noun is not effected (i.e., "Touch a ball." communicates the same information as "Touch ball.").

Phase Design: Phase VII consists of seven parts. Part 7 embodies the criterion responses. The general design used to teach and verify criterion responding is described in Phase I.

Phase VII, Part 1: When presented with word cards that contain articles, students will visually discriminate (touch) word cards in response to printed and verbal cues (e.g., The teacher presents the word a and says, "This is the word a. Touch the word a.") and will label articles in response to the cue "What is this word?"

Baseline measures were obtained in the following manner: Ss were seated at a table in front of T. T placed 4 word cards on the table in front of S_1, presented a word card and said, "S_1, this is the word a. Touch the word a." If S_1 touched the word a, T said, "S_1, what is that word?" If S_1 did not touch the correct word, T said, "Thank you." T waited 5-10 seconds, recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T then presented a different cue to S_2, etc. These procedures were implemented until each S had two opportunities to touch and label each of 4 words (a, the, and, & an).

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. *T* placed 4 word cards on the table in front of *S*s. *T* presented a word card and said, "S_1, this is the word *a*. Touch another word *a*." *T* waited 5-10 seconds for S_1 to respond and then said, "What is this word?" If S_1 responded correctly, *T* said, "Good job, S_1," recorded a correct touching response and a correct labeling response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect touching response, *T* said, "No!" presented the word card again and said, "S_1, this is the word *a*. Touch another word *a*." as *T* modeled the correct response by touching the correct word. *T* presented the word card and repeated the verbal cue, "S_1, this is the word *a*. Touch another word *a*." If S_1 correctly imitated the model, *T* smiled and said, "Good, what is that word?" If S_1 labeled the word, *T* recorded a modeled touching response and a correct labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 2b - If S_1 made no response or made an incorrect labeling response, *T* said, "No!" presented the word card and repeated the cue, "S_1, this is the word *a*. Touch another word *a*." If S_1 touched the correct word, *T* said, "*A*. This is the word *a*." S_1, what is that word?" If S_1 labeled the word, *T* recorded a correct touching response and a modeled labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect touching response, *T* said, "No!" presented the word card, said, "S_1, this is the word *a*. Touch another word *a*." as *T* physically primed the correct response by guiding S_1's hand until it touched the correct word card. *T* said, "S_1, touch the word *a*." recorded a primed response, and said, "S_1, what is this word?" If S_1 labeled the word, *T* recorded a correct response, did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made incorrect responses, *T* said, "No! This is the word *a*." as *T* touched the word *a*, recorded an incorrect touching response and an incorrect labeling response, did not issue a consumable consequence and terminated teaching. *T* presented a different cue to S_2, etc.

These procedures were implemented until each *S* touched and labeled each of the 4 word cards correctly on two consecutive occasions without assistance from *T*.

Phase VII, Part 2: *When presented with word cards that contain articles, students will visually discriminate words in response to the verbal cue, "Touch the word (a)" and will label words in response to the verbal cue "What is this word?"*

Baseline measures were obtained in the following manner: *S*s were seated at a table in front of *T*. *T* placed 4 word cards in front of S_1 and said, "S_1, touch the word *a*." If S_1 correctly responded *T* said, "What is that word?" If S_1 responded incorrectly, *T* said, "Thank you." *T* recorded the responses without indicating accuracy. Each response was followed with the neutrally spoken "Thank you." Then *T* presented a different cue to S_2, etc. When each *S* had two opportunities to touch or label each of 4 word cards, baseline measures were concluded.

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. *T* placed the 4 word cards in a row in front of S_1. *T* said,"S_1, touch the word *a*." If S_1 touched the correct word, *T* smiled and said, "Good touching. What is that word?" *T* waited 5-10 seconds for S_1 to respond. If S_1 labeled the word, *T* recorded a correct touching response and a correct labeling response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect touching response, *T* said, "No! S_1, touch the word *a*." as *T* modeled the correct touching response. *T* repeated the verbal cue, "S_1, touch the word *a*." If S_1 touched the correct word, *T* smiled, said, "Good touching. What is this word?", waited 5-10 seconds for S_1 to respond, and recorded a modeled touching response and a correct labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 2b - If S_1 made no response or made an incorrect labeling response, *T* said, "No!" *T* repeated the cue, "S_1, touch the word *a*." If S_1 correctly responded, *T* said, "Good S_1. What is that word?" If S_1 made no response or made an incorrect labeling response, *T* said, "No! S_1, touch the word *a*. This is the word *a*. What is this word?" If S_1 correctly labeled the word, *T* said, "Good S_1," recorded a correct touching response and a modeled labeling response, did not issue a consumable, and presented a different cue to S_2, etc.

Step 3a - If S_1 did not respond or made an incorrect touching response, *T* said, "No!" repeated the verbal cue, "S_1, touch the word *a*." and primed the correct response by guiding S_1's hand until it touched the correct word. *T* said, "S_1, what is this word?" If S_1 responded by labeling the word, *T* said, "Good S_1," recorded a primed touching response and a correct labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3b - If S_1 did not respond or made an incorrect labeling response, *T* said, "No!" repeated the verbal cue,"S_1, touch the word *a*." and primed the correct response by guiding S_1's hand until it touched the correct word. *T* said, "S_1, what is this word?" If S_1 did not respond correctly or did not make a labeling response, *T* said,"No!" repeated the verbal cue, "S_1, touch the word a." primed the correct response and said, "This word is a. What is this word?" If S_1 imitated the verbal model, T said, "Good S_1," recorded a primed touching response and a modeled labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, T said, "No! This word is a." and touched the word a. T recorded an incorrect touching response and an incorrect labeling response, did not issue a consumable consequence, and terminated teaching. A different cue was presented to S_2, etc.

These procedures were implemented until each S touched and labeled each of 4 words on two consecutive occasions without assistance from T.

Phase VII, Part 3: When presented with word cards that contain articles, students will label the words in response to the verbal cue "What is this word?"

Baseline measures were obtained in the following manner: Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what is this word?" If S_1 labeled the word correctly, T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T then presented a different cue to S_2, etc. Baseline measures were concluded when each S had two opportunities to label each of the 4 word cards in response to the verbal cue "What is this word?"

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what is this word?" If S_1 responded correctly, T said, "Good job S_1," recorded a correct labeling response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect labeling response, T said, "No!", presented the word card again and said, "S_1, what is this word? This is the word a. S_1, what is this word?" If S_1 correctly imitated the verbal model, T said, "Good job S_1," recorded a modeled response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not make a response or made an incorrect labeling response, T said, "No!" presented the word card again, and said, "S_1, this is the word a. What is this word?" If S_1 correctly imitated the verbal model, T said, "Good," recorded the response "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made an incorrect labeling response, T said, "No! This is the word a." recorded an incorrect response and terminated teaching. S_2 was then presented a different cue, etc.

These procedures were implemented until each S labeled each of the 4 words correctly on two consecutive occasions without assistance from T.

Phase VII, Part 4: When presented with word cards that contain noun phrases (e.g., a ball), students will label the words in response to the verbal cue "What are these words?"

Baseline measures were obtained by implementing the following procedures: Ss were seated at a table in front of T. T presented a word card to S_1 and said, "S_1, what are these words?" If S_1 labeled the words, T recorded the response without indicating accuracy. Responses were followed with the neutrally spoken "Thank you." T then presented a different cue to S_2, etc. Baseline measures were concluded when each S had two opportunities to respond to each of the 10 word cards and the verbal cue "What are these words?"

Teaching Procedures

Step 1 - Ss were seated at a table in front of T. T presented a word card and said, "S_1, what are these words?" If S_1 responded correctly, T said, "Good job S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect labeling response, T said, "No!" presented the word card, and repeated the cue, "S_1, what is this word? These words are a wagon. S_1, what are these words?" If S_1 correctly imitated the verbal model, T said, "Good job S_1," recorded a modeled response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond or made an incorrect labeling response, T said, "No! These are the words a wagon.", recorded an incorrect response, and terminated teaching. S_2 was then presented a different cue, etc.

These procedures were implemented until each S labeled each of 10 word cards correctly on two consecutive occasions without assistance from T.

Phase VII, Part 5: When presented with word cards that contain adjective phrases (e.g., a red ball), students will label the words in response to the verbal cue, "What are these words?" and demonstrate comprehension by touching the object referred to in the phrase in response to the verbal cue "Touch it."

Baseline measures of the Ss' abilities to label the words and touch correlated pictures were obtained as follows: Ss were seated at the chartboard in front of T. T placed 3 picture cards on the chartboard, placed a word card above the picture, and said, "S_1, what are these words?" If S_1 labeled the words, T said, "Touch it." If S_1 did not label the words, T said, "Thank you." and recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T then presented a different cue to S_2, etc. This procedure was implemented until each S had two opportunities to respond to each of 10 word cards.

Teaching Procedures

Step 1 - Ss were seated at the chartboard in front of T. T placed 3 picture cards on the chartboard, placed a word card above the picture, and said, "S_1, what are these words?" If S_1 responded correctly, T said, "Touch it." If S_1 correctly touched the picture, T said, "Good S_1," issued a consumable consequence, recorded a correct labeling response and a correct touching response, and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect labeling response, T said, "No!" presented the word card, repeated the cue, "S_1, what are these words?" and verbally modeled the correct response, "These are the words a wagon." T repeated the cue, "S_1, what are these words?" If S_1 correctly imitated the verbal model, T smiled, said, "Good," recorded "M," did not deliver a consumable consequence and said, "S_1, touch it." If S_1 responded correctly, T smiled, said "Good S_1," recorded a correct touching response, and presented a different cue to S_2, etc.

Step 2b - If S_1 labeled the word correctly, but did not make a correct touching response, T said, "No!" presented the word card, and repeated the verbal cue, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "Good," recorded a correct labeling response, said "Touch it." and modeled the correct touching response. T again presented the word card and repeated the verbal cue "S_1, what are these words?" If S_1 correctly labeled the words, T recorded a correct labeling response, and said "Good, touch it." If S_1 touched the correct picture, T said, "Good," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond correctly or made no response, T said, "No! These are the words a wagon.", touched the correct picture, recorded incorrect labeling and touching responses and terminated teaching. S_2 was then presented a different cue, etc.

These procedures were implemented until each S labeled 10 article-noun phrases and touched 10 pictures correctly on two consecutive occasions without assistance from T.

Phase VII, Part 6: When presented with word cards that contain adjective phrases (e.g., a red ball), students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by touching the object referred to in the phrase in response to the verbal cue "Touch it."

Baseline measures of Ss' abilities to label words and touch pictures were obtained as follows: Ss were seated at the chartboard in front of T. T placed 5 picture cards on the chartboard. T place a word card above the pictures and said, "S_1, what are these words?" If S_1 labeled the words, T said, "Touch it." If S_1 did not label the words, T said, "Thank you." and recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T then presented a different cue to S_2, etc. This procedure was implemented until each S had two opportunities to label each of 10 word cards containing article adjective noun phrases and touch correlated pictures.

Teaching Procedures

Step 1 - Ss were seated at the chartboard in front of T. T placed 5 picture cards on the chartboard, placed a word card above the pictures and said, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "Touch it." If S_1 touched the correct picture, T said, "Good S_1," issued a consumable consequence, recorded a correct labeling and a correct touching response,and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect labeling response, T said, "No!" presented the word card, repeated the cue, "S_1, what are these words?" and verbally modeled the correct response, "These words are a red wagon." T repeated the cue, "S_1, what are these words?" If S_1 labeled the words, T smiled, said "Good," recorded "M," did not deliver a consumable consequence, and said, "S_1, touch it." If S_1 touched the correct picture, T smiled, said "Good touching, S_1." recorded a correct touching response, and presented a different cue to S_2, etc.

Step 2b - If S_1 labeled the word correctly, but did not make a correct touching response, T said, "No!" presented the word card and repeated the verbal cue, "S_1, what are these words?" If S_1 labeled the words correctly, T said, "Good," recorded a correct labeling response, said "Touch it." and modeled the correct touching response. T again presented the word card and repeated the verbal cue, "S_1, what are these words?" If S_1 correctly labeled the words, T recorded a correct labeling response and said, "Good, touch it." If S_1 touched the correct picture, T said, "Good," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not respond correctly or made no response, T said "No! These are the words a red wagon." touched the correct picture, recorded incorrect labeling and touching responses, and terminated teaching. S_2 was then presented a different cue, etc.

Instruction continued until each S correctly labeled and touched each of 10 word cards and pictures on two consecutive occasions without assistance from T.

Phase VII, Part 7: When presented with word cards that contain direct commands (e.g., Bounce a/an/the/orange ball.), students will label the words in response to the verbal cue "What are these words?" and demonstrate comprehension by selecting the object and performing the action.

Baseline measures were obtained in the following manner: Ss were seated in front of the chartboard. T placed 5 sentence cards on the chartboard in front of Ss, pointed to a card and said, "S_1, what are these words?" T waited 5-10 seconds for S_1 to label the words. T followed a correct labeling response with "Show me" or "Do it." If S_1 did not label the words correctly, T said, "Thank you." T recorded responses without indicating accuracy. T replied with the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 10 sentence cards containing a verb an article an adjective and a noun and perform the correlated actions.

Teaching Procedures

Step 1 - T placed 5 sentence cards on the chartboard, pointed to a card and said, "S_1, what are these words?" If S_1 responded correctly, T waited 5-10 seconds and said, "Show me" or "Do it." If S_1 performed correctly, T recorded a correct labeling response and a correct action response, issued a consumable consequence, and said, "Good job, S_1." T then presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect action response, T said, "No! S_1, read the words again." If S_1 labeled the words and performed the action correctly, T recorded a correct labeling response "+2" and a correct action response "+2", issued a consumable consequence and said, "Good reading S_1." T then presented a different cue to S_2, etc.

Step 3a - If S_1 made no response or made an incorrect labeling response, T said, "No!" and modeled the correct response, "S_1, these are the words push a red wagon." T repeated the cue. If S_1 labeled the words correctly, T said, "Do it." If S_1 performed appropriately, T recorded a modeled labeling response and a correct action response, said, "Good S_1," issued a consumable consequence, and presented a different cue to S_2, etc.

Step 3b - If S_1 made no response or made an incorrect action response, *T* said, "No! S_1, read the words again." If S_1 correctly labeled the words, *T* recorded a "+3" labeling response and performed the action. *T* repeated the cue. If S_1 correctly labeled the words and correctly performed the action, *T* said "Good S_1," recorded a modeled action response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, *T* said, "No! S_1, the sentence is *push a red wagon*." recorded an incorrect labeling response, and performed the action directed by the sentence. *T* recorded an incorrect action response, did not issue a consumable consequence, and terminated teaching. *T* presented a different cue to S_2.

These procedures were implemented until each *S* correctly labeled and demonstrated appropriate actions for 10 sentences on two consecutive occasions without assistance from *T*.

Phase VIII: Teaching students to label printed words that represent selected proper names (e.g., Tom) and to demonstrate comprehension of the proper names by touching individuals of those names.

Phase Design: Phase VIII consisted of five parts. Part 5 embodies the criterion responses. The general design used to teach and verify criterion responding is described in Phase I.

Phase VIII, Part 1: When presented with a group of classmates, students will visually discriminate (touch) self and classmates in response to verbal name cues (e.g., "Touch Tom.").

Baseline measures were obtained in the following manner: Three *S*s and *T*s stood in front of *T* and S_1. *T* said, "S_1, touch Tom." *T* recorded the response without indicating accuracy. Each response was followed by the neutrally spoken "Thank you." The verbal directions were presented to each *S* in rotation. Baseline measures were concluded when each *S* had two opportunities to respond to different verbal name cues.

Teaching Procedures

Step 1 - The 3 *S*s and T_2 stood in front of S_1 and *T*. *T* said, "S_1, touch Tom." If S_1 touched the correct person, *T* recorded a correct response, issued a consumable consequence and said, "Good touching, S_1." *T* then asked S_1 to stand up and asked S_2 to sit down. *T* presented a different cue to S_2, etc.

Step 2 - If S_1 did not respond or made an incorrect touching response, *T* said, "No! S_1, touch Tom." as *T* touched the correct person. *T* repeated the cue, "S_1, touch Tom." If S_1 touched the correct person, *T* said, "Good touching S_1," recorded an "M," did not issue a consumable consequence, and asked S_1 to stand in line. S_2 sat down and was presented a different cue, etc.

Step 3 - If S_1 did not respond or made an incorrect touching response, T said, "No! S_1, touch Tom." as T primed the touching response by guiding S_1's hand until it touched the correct person. T said, "Good touching," recorded a "P," did not issue a consumable consequence, and asked S_1 to stand in line. S_2 sat down and was presented a different cue, etc.

Step 4 - If S_1 did not respond or made an incorrect touching response, T said, "No! S_1, touch Tom." and T touched the correct person. T recorded an incorrect touching response, did not issue a consumable consequence, and terminated teaching. T asked S_1 to stand in line and S_2 to sit down. S_2 was presented a different cue, etc.

These procedures were implemented until each S responded correctly to 5 different verbal name cues on two consecutive occasions without assistance from T.

Phase VIII, Part 2: When presented with a classmate, students will make a proper name response in response to the verbal cue "Who is this?"

Baseline measures were obtained in the following manner: Ss were seated in front of T. T asked S_2 to stand beside her. T pointed to S_2 standing beside her and said, "S_1, who is this?" T recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to name each of 3 classmates and themselves.

Teaching Procedures

Step 1 - Ss were seated in front of T. T asked S_2 to stand beside her. T pointed to S_2 and said, "S_1, who is this?" If S_1 correctly labeled the classmate, T recorded a correct response, issued a consumable consequence, and said, "Good S_1." T asked S_2 to sit down, asked S_3 to stand beside her and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect labeling response, T said, "No! S_1, this is Tom. Who is this?" as T pointed to the person standing beside her. If S_1 correctly named the person, T said, "Good S_1," recorded an "M," did not issue a consumable consequence, and asked S_2 to sit down. T asked S_3 to stand beside her and presented a different cue to S_2.

Step 3 - If S_1 made no response or made an incorrect labeling response, T said, "No! This is Tom." recorded an incorrect labeling response, and terminated teaching. T asked S_2 to sit down, asked S_3 to stand beside her and presented a different cue to S_2.

These procedures were implemented until each S correctly labeled 4 persons on two consecutive occasions without assistance from T.

Phase VIII, Part 3: *When presented with word cards that contain proper names students will visually discriminate words in response to printed and verbal cues (e.g., The teacher presents a word card and says "This is the word Tom. Touch another word Tom.") and will label the word in response to the cue "What is this word?"*

Baseline measures were obtained in the following manner: *S*s were seated at a table in front of *T*. *T* placed 4 word cards in front of S_1. *T* presented a word card and said, "S_1, this is the word *Tom*. Touch another word *Tom*." If S_1 touched the correct word, *T* said, "What is this word?" If S_1 did not touch the correct word, *T* said, "Thank you." *T* recorded the touching and labeling responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each *S* had two opportunities to touch and label each of 4 word cards.

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. *T* placed 4 word cards in front of S_1. *T* presented a word card and said, "S_1, this is the word *Tom*. Touch another word *Tom*." If S_1 made a correct response, *T* said, "Good touching S_1," recorded a correct response, and said, "What is this word?" If S_1 correctly labeled the word, *T* said, "Good S_1," recorded a correct response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 did not make a response or made an incorrect touching response, *T* said, "No!" *T* presented the word card again, repeated the cue, "S_1, this is the word *Tom*. Touch another word *Tom*." and modeled the correct touching response. *T* repeated the cue, "S_1, this is the word *Tom*. Touch another word *Tom*." If S_1 made a correct touching response, *T* said, "Good touching," recorded an "M," and said, "What is this word?" If S_1 correctly labeled the word, *T* said, "Good," recorded a correct response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 2b - If S_1 made a correct touching response, but made an incorrect labeling response, *T* said, "No! S_1, this is the word *Tom*. Touch another word *Tom*." If S_1 touched the correct word, *T* said, "S_1 this is word *Tom*. What is this word?" If S_1 correctly labeled the word, *T* recorded "M," did not issue a consumable consequence, said "Good S_1," and presented a different cue to S_2, etc.

Step 3 - If S_1 did not make a response or made an incorrect response, *T* said, "No!" presented the word card again, repeated the cue, "S_1, this is the word *Tom*. Touch another word *Tom*." and primed the touching response by guiding S_1's hand until it touched the correct word. *T* said, "Good S_1," recorded a "P," and said "What is this word?" If S_1 labeled the word correctly, *T* said, "Good S_1," recorded a correct labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made incorrect touching and labeling responses or made no response, T said, "No! S_1, this is the word Tom. Touch another word Tom." as T touched the correct word and repeated "Tom." T recorded an incorrect touching response and an incorrect labeling response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S correctly touched and labeled each of 4 word cards on two consecutive occasions without assistance from T.

Phase VIII, Part 4: When presented with word cards that contain proper names, students will label the words in response to the verbal cue "What is this word?"

Baseline measures were obtained as follows: Ss were seated in front of T. T presented a proper name word card to S_1. T said "S_1, what is this word?" T recorded the response without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were implemented until each S had two opportunities to respond to each of 4 proper name word cards.

Teaching Procedures

Step 1 - Ss were seated in front of T. T presented a proper name word card to S_1. T said, "S_1, what is this word?" If S_1 correctly labeled the proper name, T said, "Good S_1," recorded a correct labeling response, issued a consumable consequence,and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect labeling response, T said, "No! S_1, this word is Tom. What is this word?" If S_1 made a correct response, T said, "Good S_1," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect labeling response, T said, "No! This word is Tom." recorded an incorrect response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S correctly labeled each of 4 proper name word cards on two consecutive occasions without assistance from T.

Phase VIII, Part 5: When presented word cards that contain proper names, students will label the words in response to the verbal cue "What is this word?" and will demonstrate comprehension by touching the appropriate person.

Baseline measures were obtained in the following manner: Three Ss and Ts stood in front of T and S_1. T presented a proper name card to S_1 and said, S_1, what is this word?" T waited 5-10 seconds for S_1

to label the word. If S_1 labeled the word correctly T waited 5-10 seconds for S_1 to touch the correct person. If S_1 did not label the word correctly, T said, "Thank you." and recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were implemented until each S had two opportunities to respond to each of 4 different proper name cards.

Teaching Procedures

Step 1 - Three Ss and T_2 stood in front of T and S_1. T presented a proper name card to S_1 and said, "S_1, what is this word?" T waited 5-10 seconds for S_1 to label the word and 5-10 seconds for S_1 to touch the correct person. If S_1 made the correct labeling and touching responses, T said, "Good S_1," recorded a correct labeling response and a correct touching response, issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 made a correct labeling response and an incorrect touching response, T said, "No! S_1, what is this word?" If S_1 labeled the word correctly again, T said, "Good S_1, touch *Tom*." If S_1 made a correct touching response, T said, "Good S_1," recorded a correct labeling response and a "vc" touching response, did not issue a consumable consequence,and presented a different cue to S_2, etc.

Step 2b - If S_1 made a correct labeling response and an incorrect touching response, T said, "No! S_1, what is this word?" If S_1 labeled the word correctly, T said, "Good S_1, touch _____." as T touched the correct person. T repeated the cue, "S_1, what is this word?" If S_1 correctly labeled the proper name card and touched the correct person, T recorded a correct labeling response and a modeled touching response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 2c - If S_1 made a correct labeling response and an incorrect touching response, T said, "No!" recorded a correct labeling response and an incorrect touching response, did not issue a consumable,and presented a different cue to S_2, etc.

Step 3 - If S_1 made an incorrect labeling response, T said, "No! S_1, this word is *Tom*. What is this word?" If S_1 correctly labeled the proper name card, T recorded an "M" on the data sheet. If S_1 made a correct touching response, T recorded a correct touching response, said "Good S_1," did not issue a consumable consequence,and presented a different cue to S_2, etc.

Step 4 - If S_1 made an incorrect labeling response or made no response, T said, "No! S_1, this word is ____." and touched the person, recorded an incorrect labeling response and an incorrect touching response, did not issue a consumable consequence, and terminated teaching. T presented a different cue to S_2, etc.

These procedures were implemented until each S responded correctly on two consecutive occasions by labeling 4 proper name word cards and making 4 correct touching responses without assistance from T.

Phase IX: Teaching students to label printed words in selected sentences (e.g., proper name, verb, article, adjective, noun, or "Tom, bounce the red ball.") and to demonstrate comprehension by performing the actions directed by the sentences.

Phase Design: Phase IX combines the components of Phase VI and Phase VIII and consists of four parts. Part 4 embodies the criterion responses. The general design used to teach and verify criterion responding is described in Phase I.

Phase IX, Part 1: When presented with sentence cards, students will visually discriminate (touch) specific sentences in response to visual and verbal cues (e.g., The teacher presents a sentence card and says, "This sentence is Nancy, push the red wagon. Touch another sentence like it.").

Baseline measures were obtained as follows: Ss were seated in front of the chartboard in the Reading Corner. T placed 5 sentence cards on the chartboard, presented a duplicate of one of the sentences at eye level and said, "S_1, this is the sentence - Nancy, push the red wagon. Touch the same sentence." If S responded to the verbal and visual cues, the response was recorded without indicating accuracy. T said "Thank you." The procedure was implemented until each S had two consecutive opportunities to touch each of 11 sentence cards in response to verbal and visual cues.

Teaching Procedures

Step 1 - T placed 5 sentence cards on the chartboard, presented a duplicate of one of the sentences at eye level and said, "S_1, this is sentence - Nancy, push the red wagon. Touch the same sentence." If S_1 correctly touched the sentence, T smiled, said "Good touching," recorded a correct response, issued a consumable consequence, and presented a different sentence card to S_2, etc.

Step 2 - If S_1 did not respond or made an incorrect touching response, T said, "No!" repeated the cue, "S_1, this is the sentence - Nancy, push the red wagon. Touch the same sentence." T modeled the correct touching response and then repeated the cue, "S_1, this is the sentence - Nancy, push the red wagon. Touch the same sentence." If S_1 correctly touched the sentence, T smiled, said, "Good touching S_1," did not issue a consumable consequence, recorded the response "M," and presented a different sentence card to S_2, etc.

Step 3 - If S_1 did not respond or made an incorrect touching response, T said, "No!" and repeated the cue, "S_1, this is the sentence - Nancy, push the red wagon. Touch the same sentence." and primed the touching response by guiding S_1's hand until it touched the same sentence, smiled and said, "Good S_1." T recorded the response "P," did not issue a consumable consequence, and presented S_2 with a different sentence card, etc.

Step 4 - If S_1 did not respond or responded incorrectly, T said, "No!" repeated the cue, "S_1, this is the sentence - Nancy, push the red wagon." as T touched the correct sentence. T recorded an incorrect response, did not issue a consumable consequence, and presented a different sentence card to S_2, etc.

These procedures were implemented until each S correctly touched and labeled each of 11 sentence cards on two consecutive occasions without assistance from T.

Phase IX, Part 2: When presented with sentence cards, students will visually discriminate specific sentences in response to the verbal cue "Touch the sentence Nancy, push the red wagon." and label the sentence in response to the verbal cue "What is this sentence?"

Baseline measures were obtained as follows: Ss were seated in front of the chartboard in the Reading Corner. T placed 5 of the 11 sentence cards on the chartboard. T said, "S_1, touch the sentence-Nancy, push the red wagon." If S_1 touched the correct sentence, T said, "What is this sentence?" If S_1 did not touch the correct sentence, T said, "Thank you," and recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to touch and label each of the 11 sentences.

Teaching Procedures

Step 1 - Ss were seated in front of the chartboard. T placed 5 sentence cards on the chartboard and said, "S_1, touch the sentence-Nancy, push the red wagon." If S_1 touched the correct sentence, T said, "Good S_1, what is this sentence?" If S_1 verbally labeled the sentence, T recorded a correct touching response and a correct labeling response, smiled, said, "Good S_1," issued a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 did not respond or made an incorrect response, T said, "No!" repeated the cue, "S_1, touch the sentence-Nancy, push the red wagon." and touched the correct sentence. T repeated the cue, "S_1, touch the sentence-Nancy, push the red wagon." If S_1 touched the correct sentence, T smiled, said, "Good touching the sentence-Nancy, push the red wagon." recorded "M," and said, "S_1, what are these words?" If S_1 responded correctly, T said, "Good S_1," recorded a correct labeling response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 2a - If S_1 did not respond or made an incorrect labeling response, T said, "No! S_1, touch the sentence-Nancy, push the red wagon." If S_1 correctly responded, T smiled, said, "Good S_1. What are these words?" and modeled the response, "This sentence is-Nancy, push the red wagon." T repeated the cue, "S_1, touch the sentence-Nancy, push the red wagon." If S_1 responded correctly, T said, "Good S_1. What are these words?" If S_1 correctly imitated the verbal model, T said, "Good S_1," recorded a correct touching response and a modeled labeling response, did not issue a consumable consequence,and presented a different cue to S_2, etc.

Step 3a - If S_1 did not respond or made an incorrect touching response, T said, "No!" repeated the cue, "S_1, touch the sentence-Nancy, push the red wagon." and guided S_1's hand until it touched the correct sentence. T said, "Good touching," recorded a primed response and said, "S_1, what is this sentence?" If S_1 labeled the sentence T recorded a correct labeling response,and presented a different sentence to S_2, etc.

Step 3b - If S_1 did not label the sentence correctly, T said, "No!" repeated the cue, "S_1, touch the sentence-Nancy, push the red wagon." and primed the touching response. T said, "What is this sentence? This sentence is Nancy, push the red wagon. S_1, what is this sentence?" If S_1 labeled the sentence correctly, T said, "Good S_1," recorded a primed touching response and a modeled labeling response, did not issue a consumable consequence,and presented a different cue to S_2, etc.

Step 4 - If S_1 did not respond or made incorrect responses, T said, "No!" and touched the correct sentence. T said,"This is the sentence-Nancy, push the red wagon." T recorded incorrect responses and presented a different cue to S_2, etc.

These procedures were implemented until each S correctly touched and labeled each of 11 sentences on two consecutive occasions without assistance from T.

Phase IX, Part 3: When presented with sentence cards, students will label the sentences in response to the verbal cue, "Read this sentence."

Baseline measures were obtained as follows: Ss were seated in front of the chartboard in the Reading Corner. T placed 5 sentence cards on the chartboard, pointed to a sentence card and said, "S_1, read this sentence." T recorded the responses without indicating accuracy and replied with the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 11 sentences in response to verbal cues.

Teaching Procedures

Step 1 - T placed 5 sentences on a chartboard, pointed to a sentence card, said, "S_1, read this sentence." and waited

5-10 seconds. If $\underline{S}_1$ responded correctly, T recorded a correct labeling response, issued a consumable consequence and said, "Good reading $\underline{S}_1$." T then presented a different sentence to $\underline{S}_2$, etc.

Step 2 - If $\underline{S}_1$ did not respond or made an incorrect labeling response, T said, "No! This sentence is Nancy, push the red wagon. Read this sentence." If $\underline{S}_1$ labeled the sentence correctly, T said, "Good $\underline{S}_1$," recorded an "M," did not issue a consumable consequence, and presented a different sentence card to $\underline{S}_2$, etc.

Step 3 - If $\underline{S}_1$ did not make a response or made an incorrect response, T said, "No! This sentence is Nancy, push the red wagon." recorded an incorrect response, did not issue a consumable consequence, and presented a different sentence card to $\underline{S}_2$, etc.

These procedures were implemented until each S correctly labeled each of 11 sentences on two consecutive occasions without assistance from T.

Phase IX, Part 4: When presented with sentence cards, students will label the sentences and will demonstrate comprehension by performing the actions directed by the sentences.

Baseline measures were obtained in the following manner: Ss were seated in front of the chartboard in the Reading Corner. T placed 5 sentences on the chartboard, pointed to a sentence and said, "$\underline{S}_1$, read this sentence. Do what the sentence tells you." T waited 5-10 seconds for $\underline{S}_1$ to read the sentence and perform the action directed by the sentence. If $\underline{S}_1$ labeled the words and performed the action correctly, or if $\underline{S}_1$ did not label the words or perform the action correctly, T recorded the labeling responses and the action responses without indicating accuracy. T replied with the neutrally spoken "Thank you." Baseline measures were concluded when each S had two opportunities to label each of 11 sentences and perform the correlated actions directed by the sentences.

Teaching Procedures

Step 1 - T placed 5 sentence cards on the chartboard, pointed to a sentence and said, "$\underline{S}_1$, read the sentence. Do what the sentence tells you." If $\underline{S}_1$ labeled the words correctly, T waited 5-10 seconds for $\underline{S}_1$ to perform the action. If $\underline{S}_1$ performed correctly, T recorded a correct labeling response and a correct action response, issued a consumable consequence, said, "Good reading $\underline{S}_1$," and then presented a different sentence to $\underline{S}_2$, etc.

Step 2a - If $\underline{S}_1$ made no response or made an incorrect action response, T said, "No! $\underline{S}_1$, read the sentence again. Do what the sentence tells you." If $\underline{S}_1$ labeled the words correctly and performed the action correctly, T recorded a correct labeling response "+2" and a correct action response "+2", issued a consumable consequence, and said, "Good reading $\underline{S}_1$." *T* then presented a different sentence to $\underline{S}_2$, etc.

Step 2b - If $\underline{S}_1$ made no response or made an incorrect labeling response, *T* marked the missed words and said, "No! Read the sentence again." If $\underline{S}_1$ labeled the sentence correctly, *T* recorded a "+2" labeling response and waited 5-10 seconds for $\underline{S}_1$ to perform the action. If $\underline{S}_1$ performed the action, *T* recorded a "+2" action response and said, "Good $\underline{S}_1$," issued a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 3a - If $\underline{S}_1$ made no response or made an incorrect action response, *T* said, "No! $\underline{S}_1$, read the sentence again." If $\underline{S}_1$ correctly labeled the sentence, *T* recorded a "+3" labeling response and said, "Do it!" If $\underline{S}_1$ correctly performed the action, *T* said "Good $\underline{S}_1$," recorded a "vc" action response, did not issue a consumable consequence, and presented a different cue to $\underline{S}_2$, etc.

Step 3b - If $\underline{S}_1$ made no response or made an incorrect labeling response, *T* said, "No!" and marked the missed words. *T* pointed to a missed word and said, "$\underline{S}_1$, what is this word?" If $\underline{S}_1$ labeled the word, *T* said, "Good $\underline{S}_1$, this word is _____. What is this word?" If $\underline{S}_1$ again labeled the word, *T* said "Good $\underline{S}_1$," and presented another word. If $\underline{S}_1$ did not make a correct response, *T* said, "No! $\underline{S}_1$, this word is _____. Touch the word _____." If $\underline{S}_1$ touched the word, *T* said, "Good $\underline{S}_1$, what is this word?" If $\underline{S}_1$ correctly labeled the word, *T* said, "Good $\underline{S}_1$, what is this word?" If $\underline{S}_1$ labeled the word, *T* presented a different word or *T* said, "$\underline{S}_1$, read the sentence again. Do what the sentence tells you." If $\underline{S}_1$ labeled the sentence, *T* recorded an "M," and waited 5-10 seconds for $\underline{S}_1$ to perform the action. If $\underline{S}_1$ performed the action, *T* recorded a "+3" action response, said "Good $\underline{S}_1$," did not issue a consumable, and presented a different sentence to $\underline{S}_2$, etc.

Step 4 - If $\underline{S}_1$ made no response or made incorrect responses, *T* said, "No! $\underline{S}_1$, the sentence is *Nancy, push the red wagon*." recorded an incorrect labeling response and performed the action directed by the sentence. *T* recorded an incorrect action response, did not issue a consumable consequence, and terminated teaching. *T* presented a different sentence to $\underline{S}_2$, etc.

These procedures were implemented until each *S* correctly labeled each of 11 sentences and performed the actions on two consecutive occasions without assistance from *T*.

Phase X: *Teaching students to label chart stories and to demonstrate comprehension by performing the actions directed by the stories.*

Phase Design: Phase X, the labeling of chart stories and the subsequent performance of the actions directed by the stories, consisted of one part. Baseline measures of responses to 7 chart stories were obtained prior to the teaching of any story. Recorded responses were: 1) word labeling (words correct and incorrect); 2) demonstration of comprehension by performance of an action (correct or incorrect); and 3) description of action performed (correct and incorrect). The stories were seriated and Story I considered to be less difficult than Story 2. The use of the verbal cue "Show me" or "Do it.", was not considered necessary or desirable. Therefore, the verbal cue "Show me" or "Do it" was included only in the teaching procedures.

Baseline measures of each *S*s ability to label the words in the chart stories and to demonstrate comprehension by performing the actions directed by the stories were obtained in the following manner: *S*s were seated at the chartboard containing the chart stories in the *Reading Corner*. S_1's name was placed in the last sentence of Chart Story I. *T* said, "S_1 read the story. Do what the story tells you." If S_1 labeled words in the Chart Story 1 the response was recorded without indicating accuracy. If S_1 mislabeled words in the story, *T* recorded those mislabeled words by placing an X over each incorrect word on the data sheet. *T* waited 5-10 seconds for S_1 to perform the action directed by the story. If S_1 performed the action or performed incorrectly, *T* recorded the movement made by S_1 (e.g., sat on chair) without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." This procedure was implemented for Chart Stories I-VII until each *S* had two opportunities to label the words in Chart Stories I-VII and perform the correlated actions directed by the stories.

Phase X, Part 1: *When presented with a chart story containing phrases and sentences, students will label the words in the chart story and demonstrate comprehension by performing the actions directed by the stories in response to the verbal cues "Read the story. Do what the story tells you to do."*

Baseline measures were obtained using the procedure described in Phase X.

Teaching Procedures

Step 1 - *S*s were seated at a chartboard containing Chart Story I in the Reading Corner. *T* said, "S_1, read the story. Do what the story tells you." If S_1 labeled the words correctly, *T* recorded a correct labeling response. *T* waited 5-10 seconds for S_1 to perform the actions directed by the story. If S_1 performed the action correctly, *T* said, "Wow! Good reading!" recorded a correct action response, issued a consumable consequence,and presented Chart Story II to S_2, etc.

Step 2a - If S_1 did not label the words in Chart Story I correctly, *T* marked the incorrectly labeled words, waited until S_1 had finished labeling the words in the story and said, "No! S_1 read the story again." If S_1 correctly labeled all of the words, *T* recorded a correct labeling response "+2" and waited 5-10 seconds for S_1 to perform the action. If S_1 performed the action correctly, *T* recorded a correct action response "+2", said, "Good reading $\underline{S}_1$," issued a consumable consequence, and presented Chart Story 2 to $\underline{S}_2$, etc.

Step 2b - If $\underline{S}_1$ did not label the words in Chart Story 1 correctly after the second cue, *T* said, "$\underline{S}_1$ what is this word?" as *T* pointed to the mislabeled word. If $\underline{S}_1$ labeled the word correctly, *T* pointed to the mislabeled word again and repeated the cue. If $\underline{S}_1$ labeled the word correctly again, *T* said, "Good $\underline{S}_1$," and presented another mislabeled word. If $\underline{S}_1$ did not label the word correctly, *T* said, "No! $\underline{S}_1$ this is word _____. Touch word _____." If $\underline{S}_1$ touched the word correctly, *T* said, "Good $\underline{S}_1$, what is this word?" If $\underline{S}_1$ labeled the word correctly, *T* said, "Good $\underline{S}_1$, what is this word?" If $\underline{S}_1$ again correctly labeled the word, *T* said, "Good $\underline{S}_1$," and presented another word or said, "Now $\underline{S}_1$, read the words. Do what the story tells you." If $\underline{S}_1$ responded correctly, *T* said, "Good reading $\underline{S}_1$." recorded a modeled response and a correct action response, did not issue a consumable consequence, and presented Chart Story 2 to $\underline{S}_2$, etc.

Step 3a - If $\underline{S}_1$ labeled all the words correctly but did not perform the action correctly, or did not make a response in the 5-10 seconds, *T* said, "No! $\underline{S}_1$ read the story. Do what the story tells you." If $\underline{S}_1$ labeled the words correctly again, *T* recorded a correct labeling response, waited 5-10 seconds for $\underline{S}_1$ to perform the action. If $\underline{S}_1$ performed the action correctly, *T* said, "Good job $\underline{S}_1$," recorded a "+2" action response, did not issue a consumable consequence, and presented Chart Story 2 to $\underline{S}_2$, etc.

Step 3b - If $\underline{S}_1$ did not make a response or did not make a correct action response, *T* said, "$\underline{S}_1$, read the last sentence again." If $\underline{S}_1$ labeled the last sentence correctly, *T* said, "Do it!" If $\underline{S}_1$ performed the action correctly, *T* recorded a "vc" response, said, "Good job $\underline{S}_1$," did not issue a consumable consequence, and presented Chart Story 2 to $\underline{S}_2$, etc.

Step 4a - If $\underline{S}_1$ did not respond correctly or made no action response, *T* said, "No! $\underline{S}_1$, the story told you to *push the red wagon*." *T* recorded a correct labeling response "+3" and an incorrect action response, did not issue a consumable consequence, terminated teaching, and Chart Story 2 was presented to $\underline{S}_2$, etc.

Step 4b - If $\underline{S}_1$ did not label the words correctly and did not perform the action correctly, *T* recorded an incorrect word labeling response and an incorrect action response, and said, "No! $\underline{S}_1$, listen." as *T* read Chart Story 1 to $\underline{S}_1$. *T* said, "$\underline{S}_1$, look!" performed the action directed by the story, terminated teaching and presented Chart Story 2 to $\underline{S}_2$, etc.

These procedures were implemented until each *S* had correctly labeled and performed the actions directed by Chart Stories 1-7 on two consecutive occasions without assistance from *T*.

Phase XI: Teaching students to label selected printed sentences which contain selected prepositional phrases (e.g., proper name verb article noun preposition article noun, or Don, put the ball in the cup.) and demonstrate comprehension by performing the actions directed by the sentences.

Phase Design: Phase XI consists of 4 parts. The design used to teach and verify criterion responding was an adaptation of the multiple baseline. The criterion responses required in Phase XI were for Ss to label sentences containing prepositions and to perform actions directed by those sentences. Phase XI, Part 1 was a basic one component direction following program. The directions were presented in 3 sets (A, B and C). Part 1 and Part 4 were designed as follows:

A) Measure the skills required in Set A, Set B and Set C
B) Teach the skills required in Set A
C) Teach the skills required in Set B
D) Measure the skills required in Set A-B
E) Teach the skills required in Set C
F) Measure the skills required in Set A-B-C

Phase XI, Part 2 utilized a sight word drill to teach the 7 prepositions and the 7 new verbs. The 3 new nouns were taught using the teaching procedure outlined in Phase I. The method for teaching the new verbs differed from the method presented in Phase II, as the action of the Phase II verbs could be demonstrated with an object (i.e., Dan bounce a ball) or without an object (i.e., Dan bounce.) In Phase XI, the verbs (i.e., put, give, take, bring, get) required the use of prepositions and objects of preposition to convey meaning. The words were then combined to form the directive sentences used in Phase XI, Part 3, which required only the labeling of directive sentences. The verbal sentence directions of Part 1 were presented to Ss in their written form in Part 4 (i.e., Dan, put the cup in the sink.) and the demonstration of comprehension was a required response. The responses recorded in Phase XI, Part 4, were identical to those measures in Phase X (i.e., word labeling, words correct and incorrect; demonstration of comprehension, correct or incorrect; and a description of action performed, correct and incorrect.)

Phase XI, Part 1: When presented with verbal sentences which contain prepositional phrases, students will perform the actions directed by the verbal sentences (e.g., "Don, put the ball in the cup.").

Baseline measures of each Ss performance on all parts were obtained prior to instruction on those parts. Ss were seated at a table in front of T. T placed a ball and a cup in front of S_1 and said, "S_1, put the ball in the cup." If S_1 performed correctly or incorrectly, T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T then presented a different cue to S_2. The above procedure was implemented until each S had two opportunities to respond to 3 sets of verbal directions.

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. *T* placed a set of objects on the table in front of S_1 and said, "S_1, put the ball in the cup." If S_1 correctly followed the verbal direction, *T* smiled, said, "Good S_1," issued a consumable or toy consequence, recorded a correct response, and presented a different verbal cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect response, *T* said, "No!" repeated the cue, "S_1, put the ball in the cup." and modeled the response by putting the ball in the cup. *T* repeated the cue, "S_1, put the ball in the cup." If S_1 put the ball in the cup, *T* smiled, said, "Good S_1," recorded "M," did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect response, *T* said, "No!" repeated the cue, "S_1, put the ball in the cup." and repeated the demonstration. *T* repeated the cue, "S_1, put the ball in the cup." If S_1 correctly imitated the model, *T* smiled and said, "Good S_1," recorded "M_2," did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect response, *T* said, "No! S_1, put the ball in the cup." as *T* primed the response by physically guiding S_1's hand until it touched the ball, picked up the ball, and put the ball in the cup. *T* said, "Good, put the ball in the cup." *T* recorded a primed response, did not deliver a consumable consequence, and presented a different cue to S_2, etc.

Step 5 - If S_1 made no response or made an incorrect response, *T* said, "No! Put the ball in the cup." as *T* put the ball in the cup. *T* recorded an incorrect response and teaching was terminated. S_2 was then given a different cue, etc.

These procedures were implemented until each *S* followed the directions of Set A and Set B on two consecutive occasions without assistance from *T*. Sets A and B were then combined and presented to each *S*. If an *S* responded correctly to Set A-B on two consecutive occasions without assistance from *T*, Set C was presented. After teaching Set C, Set A-B-C was presented to each *S*. If each *S* followed the directions of Set A-B-C (a total of 19 sentences) correctly on two consecutive occasions without assistance from *T*, teaching was terminated.

Phase XI, Part 2: *When presented with word cards that contain prepositions and verbs, students will label those words in response to the verbal cue "What is this word?"*[4]

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[4] The verb *is* is introduced here along with regular action verbs.

Baseline measures were as follows: *S*s were seated at a table in front of *T*. *T* presented a word card and said, "S_1, what is this word?" The response was recorded without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." *T* then presented a different cue to S_2. Baseline measures were completed when each *S* had two opportunities to respond to each of 7 prepositions and 6 verbs. Baseline measures of the 3 nouns were obtained using the procedure described in Phase I.

Teaching Procedures

Step 1 - *S*s were seated at a table in front of *T*. *T* presented a word card and said, "S_1, what is this word?" If S_1 labeled the word correctly, *T* said, "Good S_1," issued a consumable consequence, recorded a correct response, and presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect labeling response, *T* said, "No! This word is in." *T* presented the word card again and repeated the cue, "What is this word?" If S_1 correctly labeled the word, *T* said, "Good S_1," recorded a modeled response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 made no response or made an incorrect labeling response, *T* said, "No! This word is *in*. Touch the word *in*." *T* primed the response by guiding S_1's hand until it touched the word card and said, "S_1, this word is *in*. What is this word?" If S_1 correctly touched the word and imitated the verbal model, *T* said, "Good S_1," recorded an "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no response or made an incorrect labeling response, *T* said, "No! This word is *in*." recorded an incorrect response and terminated teaching. *T* presented a different cue to S_2, etc.

These procedures were implemented until each *S* correctly labeled each of 7 prepositions, 6 verbs, and 3 nouns on two consecutive occasions, without assistance from *T*.

Phase XI, Part 3: *When presented with sentence cards that contain prepositional phrases, students will label the sentences in response to the verbal cue "Read the sentences."*

Baseline measures were obtained as follows: *S*s were seated at the chartboard in the *Reading Corner*. *T* placed 6 sentence cards on the chartboard, pointed to one sentence and said, "S_1, read this sentence." The response was recorded without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." *T* then presented a different sentence card to S_2, etc. This procedure was implemented until each *S* had two opportunities to respond to Set A, Set B and Set C (6, 6 and 7 different sentences respectively).

Teaching Procedures

Step 1 - Ss were seated at the chartboard in the Reading Corner. T placed 6 sentence cards on the chartboard, pointed to a sentence and said, "S_1, read this sentence." T waited 5-10 seconds. If S_1 correctly labeled the words, T recorded a correct response, issued a consumable consequence, and said, "Good reading, S_1," and then presented a different cue to S_2, etc.

Step 2 - If S_1 made no response or made an incorrect labeling response, T said, "No! This sentence is Dan, put the ball in the cup. What is this sentence?" If S_1 imitated the verbal model, T said, "Good S_1," recorded an "M," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3 - If S_1 did not make a response or made an incorrect labeling response, T said, "No! This sentence is Dan, put the ball in the cup. Touch sentence Dan, put the ball in the cup." If S_1 made the correct touching response, T said, "Good. This sentence is Dan, put the ball in the cup. What is this sentence?" If S_1 correctly labeled the sentence in response to the verbal model, T said, "Good reading S_1," recorded an "M_2," did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 did not make a response or made an incorrect labeling response, T said, "No!" Pointed to the sentence, and said, "This sentence is Dan, put the ball in the cup." T recorded an incorrect response and terminated teaching. S_2 was given a different cue, etc.

These procedures were implemented until each S correctly labeled the 19 sentences on two consecutive occasions without assistance from T.

Phase XI, Part 4: When presented with sentences which contain prepositional phrases (e.g., Don, put the red ball in the wagon.), students will label and demonstrate comprehension by performing the actions directed by the sentences.

Baseline measures were obtained in the following manner: Ss were seated at a chartboard in the Reading Corner. T placed Set A on the chartboard, pointed to a sentence, and said, "S_1, read the sentence. Do what the sentence tells you." If S_1 labeled the words correctly or incorrectly, T recorded the responses without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T presented a different cue to S_2, etc. These procedures were implemented until each S had two opportunities to label three sets of printed sentences and to demonstrate comprehension by performing the actions directed by the sentences.

Teaching Procedures

Step 1 - *S*s were seated at a chartboard in the *Reading Corner*. *T* placed Set A on the chartboard, pointed to a sentence card and said "S_1, read the sentence. Do what the sentence tells you." If S_1 correctly labeled the sentence and performed the action, *T* smiled, said, "Wow! Good reading," issued a consumable consequence, recorded a correct labeling and a correct action response, and presented a different cue to S_2, etc.

Step 2a - If S_1 made no response or made an incorrect action response, *T* said, "No! S_1, read the sentence. Do what the sentence tells you." If S_1 correctly labeled the sentence again and performed the action, *T* smiled, said, "Good reading," recorded a correct labeling response and a "+2" action response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 2b - If S_1 made no response or made an incorrect labeling response, *T* said, "No! S_1, read the sentence again. Do what the sentence tells you." If S_1 correctly labeled the sentence and performed the action, *T* smiled, said, "Good reading," recorded a "+2" labeling response and a correct action response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3a - If S_1 made no response or made an incorrect action response, *T* said, "No! S_1, read the sentence again." If S_1 read the sentence correctly, *T* then said, "Do it." If S_1 performed the action correctly, *T* recorded a correct labeling response and a "vc" action response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 3b - If S_1 made no response or made an incorrect labeling response, *T* marked the mislabeled word and said, "No! S_1, this word is _____. What is this word?" If S_1 correctly labeled the word, *T* said, "Good S_1. Read the sentence. Do what the sentence tells you." If S_1 read the sentence correctly and performed the action, *T* smiled, said, "Good reading," recorded a modeled labeling response and a correct action response, did not issue a consumable consequence, and presented a different cue to S_2, etc.

Step 4 - If S_1 made no responses or made incorrect responses, *T* said, "No! S_1, the sentence is *Dan, put the cup in the sink*." *T* then performed the action, recorded an incorrect labeling response and an incorrect action response, and terminated teaching. S_2 was then given a different cue, etc.

These procedures were implemented until each *S* labeled Set A and Set B and performed the actions directed by the sentences correctly on two consecutive occasions, without assistance from *T*. Sets A and B were then combined and presented to each *S*. If an *S* responded correctly to the 12 combined sentences on two consecutive occasions, T presented Set C. After the teaching of Set C, all three sets were combined and presented to each S. If each S labeled the combined 19 sentences and performed the actions directed by the sentences correctly on two consecutive occasions, without assistance from T, teaching was terminated.

Phase XII: Teaching students to label chart stories which contain sentences with prepositional phrases and to demonstrate comprehension by performing the actions directed by the stories.

Phase Design: Baseline measures of responses to chart stories were obtained prior to teaching of any stories. Recorded responses were the same as in Phase X (i.e., word labeling, demonstration of comprehension and description of action performed.) All stories were taught to a criterion of two consecutive errorless trials. It should be noted that although Phase XI contained the necessary components of chart stories containing prepositions, but the components of Phases X and XI were combined, and new chart stories were constructed.

Baseline measures were obtained in the following manner: Ss were seated at a chartboard containing Chart Story 8 in the Reading Corner. S_1's name was placed in the last sentence of Chart Story 8. T said, "S_1, read the story. Do what the story tells you." If S_1 labeled the chart story, the response was recorded by T. If S_1 mislabeled words in the story, T recorded those errors by placing an "X" over the word on the data sheet. All responses were recorded without indicating accuracy. All responses were followed by the neutrally spoken "Thank you." T waited 5-10 seconds for S_1 to perform the action directed by the story. If S_1 performed the action, T recorded the response. If S_1 did not perform the action or performed incorrectly, T recorded the movement made by S_1 (e.g., sat on chair). All responses were followed by the neutrally spoken "Thank you." Baseline procedures were implemented until each S had two opportunities to respond to each of 3 one component direction chart stories (8-10) and 3 two component direction chart stories (11-13).

Phase XII, Part 1: When presented a chart story with sentences containing prepositional phrases, students will label the words in the chart story and demonstrate comprehension by performing the action directed by the story in response to the verbal cue "Read the story. Do what the story tells you to do."

Baseline measures were obtained using the procedure on page 134, Phase XII.

Teaching Procedures

Step 1 - Two Ss were seated at a chartboard containing a chart story in the Reading Corner. S_1's name was placed in the last sentence. T said, "S_1, read the story. Do what the story tells you." If S_1 labeled the words correctly, T recorded a correct labeling response. T waited 5-10 seconds for S_1 to perform the action(s) directed by the story. If S_1 performed the action(s) correctly, *T* said, "Wow! Good reading the story!" recorded a correct action response, issued a consumable consequence, and presented Chart Story 9 to S_2, etc.

Step 2a - If S_1 did not label the words in the story correctly, *T* marked the incorrectly labeled words, waited until S_1 had finished labeling the words in the story and said, "No! S_1 read the story again." If S_1 correctly labeled all of the words in the story, *T* recorded a correct labeling response "+2" and waited 5-10 seconds for S_1 to perform the action(s). If S_1 performed the action(s) correctly, *T* recorded a correct response, said, "Good reading S_1," issued a consumable consequence, and presented Chart Story 9 to S_2, etc.

Step 2b - If S_1 did not label the words correctly after the second trial, *T* said, "S_1, what is this word?" as *T* pointed to a mislabeled word. If S_1 labeled the word correctly, *T* said, "Good S_1, what is this word?" If S_1 labeled the word correctly again, *T* said, "Good S_1," and presented another mislabeled word. If S_1 did not label the individual word correctly, *T* said, "No! S_1, this word is _____. Touch the word _____." If S_1 touched the word correctly, *T* said, "Good S_1, what is this word?" If S_1 labeled the word correctly, *T* said, "Good S_1, what is this word?" If S_1 again correctly labeled the word, *T* said, "Good S_1," and presented another word or said, "Now S_1, read the story. Do what the story tells you." If S_1 labeled the words correctly, *T* said, "Good reading S_1." *T* recorded a modeled response, if S_1 labeled all of the words correctly and a correct response if S_1 performed the action(s) correctly, did not issue a consumable consequence, and presented Chart Story 9 to S_2, etc.

Step 3a - If S_1 labeled the words correctly but did not perform the action(s) correctly or did not make a response in the 5-10 seconds, *T* said, "No! S_1, read the story. Do what the story tells you." If S_1 labeled the words correctly again, *T* recorded a correct labeling response and waited 5-10 seconds for S_1 to perform the action. If S_1 performed the action correctly, *T* said, "Good job S_1," recorded a "+2" action(s) response, did not issue a consumable consequence, and presented Chart Story 9 to S_2, etc.

Step 3b - If S_1 did not make a response or did not make a correct action response to a one component direction chart story, *T* said, "S_1, read the last sentence again." If S_1 labeled the last sentence correctly, *T* said, "Do it!" If S_1 performed the action correctly, *T* recorded a "vc" response, said "Good job S_1," did not issue a consumable consequence, and presented Chart Story 9 to S_2, etc.

Step 3c - If $\underline{S}_1$ did not make a response or made an incorrect action response to a two component story, T said, "$\underline{S}_1$, read the last two sentences again." If $\underline{S}_1$ read the first of the two sentences correctly, T said, "Do it." If $\underline{S}_1$ performed the correct action, T said, "Read the last sentence and do it." If $\underline{S}_1$ labeled the words and performed the action correctly, T said "Good $\underline{S}_1$. Now, read the two sentences again. Do what the two sentences tell you." If $\underline{S}_1$ labeled the two sentences and performed the correct actions sequentially, T said, "Wow! Good $\underline{S}_1$," recorded a correct labeling response, and a "vc" action response.

Step 4 - If $\underline{S}_1$ did not respond correctly or made no action response to a two component story, T said, "No! $\underline{S}_1$, read the last two sentences again." If $\underline{S}_1$ labeled the words correctly, T said, "Good $\underline{S}_1$, look!" as T repeated the two sentences and modeled the correct response sequentially. Then T said, "$\underline{S}_1$, read the story. Do what the story tells you." If $\underline{S}_1$ correctly labeled the words and performed the correct actions sequentially, T said, "Wow! Good $\underline{S}_1$," recorded a correct labeling response and a modeled action response, did not issue a consumable consequence, and presented Chart Story 12 to $\underline{S}_2$, etc.

Step 5a - If $\underline{S}_1$ did not respond correctly or made no action response to a one component story, T said, No! $\underline{S}_1$, the story told you to 'put the cup in the sink'." T recorded a correct labeling response "+3", an incorrect action response, did not issue a consumable consequence, and terminated teaching. Chart Story 9 was then presented to $\underline{S}_2$, etc.

Step 5b - If $\underline{S}_1$ did not respond correctly or made no action response to a two component story, T said, "No! $\underline{S}_1$, the story told you to 'give the ball to Ron' and 'give the cup to Johnson'." T recorded a correct labeling response "+4" and an incorrect action response, did not issue a consumable consequence, and terminated teaching. Chart Story 12 was then presented to $\underline{S}_2$, etc.

Step 6 - If $\underline{S}_1$ did not label a Chart Story correctly and did not perform the action(s) correctly, T recorded an incorrect word labeling response and an incorrect action response(s). T said, "No! $\underline{S}_1$, listen." as T read the chart story to $\underline{S}_1$. T said, "$\underline{S}_1$, look!" as T performed the action(s) directed by the story. Teaching was terminated and T presented Chart Story 9 or 12 to $\underline{S}_2$, etc.

These procedures were implemented until each S correctly labeled and performed the actions directed by each of 3 one component direction chart stories and each of 3 two component direction chart stories on 2 consecutive occasions without assistance from T.

RESULTS[5]

Measurement of each Ss' ability to perform the skills required in each phase was obtained prior to teaching the skills of that phase. Phases were taught sequentially and the general program design is as follows:

Baseline Phase I, Parts 7, 6, 5, 4, 3, 2 and 1
Teach Phase I, Parts 1, 2, 3, 4, 5 and 6
Re-baseline Phase I, Part 7
Teach Phase I, Part 7

The skills required in Phases II through X were taught following the same sequential format. Phases XI and XII were arranged differently in that a multiple baseline design was utilized in Phase XI, Part 1 and 4.

Baseline Phase XI, Part 1A, Part 1B, Part 1C
Teach Phase XI, Parts 1A and Part 1B
Re-baseline Phase XI, Part 1A-B
Teach Phase XI, Part 1C
Re-baseline Phase XI, Part 1A-B-C
Baseline Phase XI, Part 2
Teach Phase XI, Part 2
Baseline Phase XI, Part 3
Teach Phase XI, Part 3

Phase XI, Part 4 was arranged exactly as Part 1A through Part 1A-B-C. In Phase XII the skills required by two sets of chart stories were measured as follows:

Baseline Chart Stories 8, 9 and 10 (Set 1).
Teach Chart Stories 8, 9 and 10 (Set 1).
Baseline Chart Stories 11, 12 and 13 (Set 2).
Teach Chart Stories 11, 12 and 13 (Set 2).

Phase I: Nouns

The objective of Phase I was to teach each S to label 5 noun words and demonstrate comprehension by touching the object the word represented. During baseline trials Ss were required to label a word correctly and touch the correct object on two consecutive occasions in order for T to determine that they in fact read that word.

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[5] It is acknowledged that the reader may be interested in a graphic presentation of each S's performance both during baseline and teaching trials. Those readers should contact the senior author at Madison Public Schools, Specialized Educational Services, 545 W. Dayton Street, Madison, Wisconsin.

If Ss did not read the words, Parts , 6, 5, 4, 3, 2 and 1 were measured respectively. Ss were required to respond on two consecutive occasions in order for T to determine that they could perform the required skills for each part.

Finally, instruction was initiated on those parts where an S had performed incorrectly beginning with Part 1. A criterion of correct responding on two consecutive occasions was required for all parts of each phase in this program.

The performance of Ss in Phase I is summarized in Table 1 as follows:

S_1 required 0, 0, 0, 2, 0, 2, and 2 teaching trials in order to reach criterion performance on Parts 1 through 7 respectively.[6]

S_2 required 0, 0, 0, 0, 0, 3 and 2 teaching trials to criterion on Parts 1 through 7.

S_3 required 2, 2, 0, 12, 6, 2 and 2 teaching trials to criterion on Parts 1 through 7.

S_4 required 2, 2, 9, 2, 2, 2 and 2 teaching trials to criterion on Parts 1 through 7 respectively.

Comments

Subsequent to criterion performance on Phase I, Part 4 the instructional environment was modified for S_3, who seemed to experience difficulty scanning a series of printed words. S_3 achieved criterion after 4 teaching trials using a modified environment. The performance of S_3 indicates difficulty with Phase I, Part 3, where Ss were required to touch a word which was paired with an object. Because S_3 consistently touched the object instead of the word card, it was surmised that S_3 was unfamiliar with the meaning of the term "word." T then pointed to the word card in her hand as she gave the verbal direction. S_3 met criterion after 5 teaching trials.

Phase II: Verbs

The objective of Phase II was to verify that Ss could label the five verb words and demonstrate comprehension by performing the actions the words represent. Criterion performance in Phase II was the same as in Phase I.

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[6] It should be noted that 0 teaching trials reflects that an S performed at criterion during baseline and that 2 teaching trials reflects that an S did not perform at criterion during baseline, but did so on the following two trials essentially without instruction.

The performance of Ss in Phase II is summarized in Table 2 as follows:

S_1 required 3, 3, 4, 3, 3, 4, 3, 3, 3 and 5 teaching trials in order to reach criterion performance on Parts 1 through 10 respectively.

S_2 required 3, 5, 3, 4, 3, 3, 3, 3, 3 and 4 teaching trials in order to reach criterion performance on Parts 1 through 10.

S_3 required 7, 7, 9, 4, 6, 8, 4, 4, 8 and 6 teaching trials in order to reach criterion performance on Parts 1 through 10.

S_4 required 8, 8, 11, 10, 10, 3, 3, 3, 7 and 8 teaching trials in order to reach criterion performance on Parts 1 through 10 respectively.

Comments

As can be discerned from Table II, Part 6 S_4, who had difficulty in Phase I and in Phase II, Parts 3, 4 and 5, achieved criterion after only 3 teaching trials. Thus, the hypothesis is offered that S_4 had acquired basic visual discrimination skills.

Phase III: Verb-Noun Phrases

The objective of Phase III was to verify that Ss could label 11 verb-noun phrases and demonstrate comprehension by performing appropriate actions with the objects. Initially, Ss were requested to label all of the phrases and demonstrate comprehension. If an S labeled the 11 phrases and demonstrated comprehension of each phrase on 2 consecutive occasions, it was considered appropriate to proceed to Phase IV.

The performance of Ss in Phase III is summarized in Table 3. As can be discerned from Table 3:

S_1 and S_2 achieved criterion on Parts 1-9 of Phase III during baseline and required only 2 teaching trials each on Part 10.

S_3 required 0, 7, 3, 0, 0, 0, 7, 3, 2 and 6 teaching trials to criterion on Parts 1 through 10 respectively.

S_4 required 0, 6, 4, 3, 5, 3, 6, 6, 7 and 6 teaching trials to criterion on Parts 1 through 10 respectively.

Comments

Although recent language evaluations report that S_3 and S_4 use 3 and 4 word phrases, Table III, Part 2 indicates that S_3 and S_4 had difficulty with two word verbal responses and required the teaching procedures to reach criterion. It should be noted that while S_3 and S_4 had mastered the two word verbal responses, they repeatedly labeled only one word on the word cards used in Part 7. With instruction, S_3 and S_4 performed the two word labeling responses in 7 and 6 trials respectively.

Phase IV: Adjectives

The objective of Phase IV was to teach each S to label 8 adjective words and demonstrate comprehension by touching a picture that represented the adjective. Initially, Ss were required to label the 8 words and demonstrate comprehension by touching the correct pictures that represented the adjectives.

The performance of Ss in Phase IV is summarized in Table 4. As can be discerned from Table 4:

S_1 required 3, 2, 0, 0, 0, 0, 0, 0, 0 and 2 teaching trials to criterion in Parts 1 through 8.

S_2 required 3, 3, 0, 0, 0, 0, 0, 0, 2 and 2 teaching trials to criterion in Parts 1 through 8.

S_3 required 2, 2, 2, 2, 2, 2, 2, 6, 2 and 4 teaching trials to criterion on Parts 1 through 8.

S_4 required 0, 0, 0, 0, 0, 4, 3, 2, 4 and 2 teaching trials to criterion on Parts 1 through 8 respectively.

Comments

The total number of teaching trials in Phase IV was less than the total number per Phase I, II and III. This pattern is interpreted to suggest that the skills acquired in earlier phases are generalizing to later phases.

Phase V: Adjective-Noun Phrases

The objective of Phase V was to verify that the Ss could label adjective-noun phrases and demonstrate comprehension by touching a specific object or picture (combination of Phases IV and I). Out of a total of 26 possible phrases, ten were selected for measurement and instruction in Parts 1 through 5.

The performance of Ss in Phase V is summarized in Table 5. As can be discerned from Table 5:

$\underline{S}_1$ required 4, 0, 0, 0, 0, 2, 2 and 2 teaching trials to criterion on Parts 1 through 8.

$\underline{S}_2$ reached criterion performance during baseline of Parts 1 through 8.

$\underline{S}_3$ required 0, 0, 0, 0, 0, 3, 4 and 4 teaching trials to criterion on Parts 1 through 8.

$\underline{S}_4$ required 4, 8, 0, 0, 5, 6, 2 and 4 teaching trials to criterion on Parts 1 through 8 respectively.

Comments

It must be noted that $\underline{S}_4$ again experienced difficulty with the two word verbal responses required in Phase V, Part 1. In order to reach criterion performance on Parts 7 and 8, $\underline{S}_4$ required enlarged pictures of the objects. A vision exam during the teaching of Phase IV revealed that $\underline{S}_4$ did have severely impaired vision in his left eye. Thus, all pictures and words were enlarged and the environment was modified so that $\underline{S}_4$ was seated away from direct light sources.

Phase VI: Verb-Adjective-Noun Commands

The objective of Phase VI was to teach Ss to read 10 direct commands. It was determined that if Ss could label the 10 direct commands and perform the actions on two consecutive occasions, they would be considered sufficiently proficient to proceed to Phase VII.

The performance of Ss in Phase VI is presented in Table 6. As can be discerned from Table 6:

$\underline{S}_1$ reached criterion performance during baseline of Parts 1 through 5.

$\underline{S}_2$ required 0, 0, 2, 3 and 2 teaching trials to criterion on Parts 1 through 5.

$\underline{S}_3$ required 3, 3, 4, 0 and 4 teaching trials to criterion on Parts 1 through 5.

$\underline{S}_4$ required 0, 0, 0, 0 and 5 teaching trials on Parts 1 through 5 respectively.

Comments

Table VI clearly suggests that S_1 had successfully combined the components of Phases II and V (verbs and adjective-noun phrases).

Phase VII: Articles

The objective of Phase VII was to verify that Ss could, or teach Ss to, label phrases that contain selected articles and to demonstrate comprehension by touching an object or performing the action directed by the phrase.

The performance of Ss in Phase VII is summarized in Table 7. As can be discerned from Table 7:

S_1 achieved criterion on the baseline trials of Parts 1 through 7, respectively.

S_2 required 2, 0, 0, 0, 0, 0 and 2 teaching trials to criterion on Parts 1 through 7.

S_3 required 2, 2, 7, 2, 6, 2 and 2 teaching trials to criterion on Parts 1 through 7.

S_4 required 0, 0, 2, 2, 6, 2 and 4 teaching trials to criterion on Parts 1 through 7, respectively.

Phase VIII: Proper Name

The objective of Phase VIII was to teach Ss to read proper names. If Ss could perform the skills required in Phase VIII as they occurred in Parts 5, 4, 3, 2 and 1 on two consecutive occasions, they would be considered sufficiently proficient to proceed to Phase IX.

The performance of Ss in Phase VIII is presented in Table 8. As can be discerned from Table 8:

S_1, S_2 and S_3 achieved criterion performance on Parts 1 through 5 during baseline trials.

S_4 required 0, 2, 0, 0 and 0 teaching trials in order to reach criterion performance on Parts 1 through 5 respectively.

Phase IX: Sentences

The objective of Phase IX was to teach Ss to read 11 selected sentences. All Ss were requested to label the sentences and perform the actions directed by the sentence on two consecutive occasions (Part 4). If Ss did not label the 11 sentences and perform the actions correctly, Parts 3, 2 and 1 were measured. If measurement determined that Ss could perform the skills required in Parts 3, 2 and 1 on two consecutive occasions, teaching commenced on Part 4.

The performance of Ss in Phase IX is summarized in Table 9. As can be discerned from Table 9:

S_1 required 0, 0, 0 and 4 teaching trials to criterion on Parts 1 through 4.

S_2 required 0, 0, 0 and 2 teaching trials to criterion on Parts 1 through 4.

S_3 required 0, 0, 0 and 5 teaching trials to criterion on Parts 1 through 4 respectively.

S_4 required 2, 0, 0 and 3 teaching trials to criterion on Parts 1 through 4 respectively.

Comments

Prior to Phase IX action responses were directed with the verbal cue "Do it" or "Show me." after Ss had labeled words. In Phase IX it was decided to exclude these verbal cues after labeling of words. It should be emphasized that in Phase IX Ss were required to label the sentences and perform the actions in response to the verbal cue, "Read the sentence. Do what the sentence tells you." If an S did not perform correctly during baseline, the cues "Do it" or "Show me" were reintroduced as part of the teaching procedure.

Phase X: Chart Stories

The objective of Phase X was to verify that Ss could, or teach Ss to read 7 chart stories. Chart stories were developed using components of Phases I through IX. Measurement of S's abilities to label Chart Stories 1 through 7 and to demonstrate comprehension of each chart story on two consecutive occasions, determined whether they had successfully combined the skills of Phases I through IX. All chart stories were taught to a criterion of correct labeling and action responses on two consecutive occasions without assistance from T.

The performance of Ss in Phase X is presented in Table 10. As can be discerned from Table 10:

$\underline{S_1}$ required 2, 0, 3, 0, 0, 2 and 3 teaching trials to criterion on Chart Stories 1 through 7 respectively.

$\underline{S_2}$ required 2, 0, 2, 2, 0, 3 and 3 teaching trials to criterion on Chart Stories 1 through 7.

$\underline{S_3}$ required 0, 0, 0, 5, 5, 4 and 4 teaching trials to criterion on Chart Stories 1 through 7.

$\underline{S_4}$ required 0, 0, 0, 9, 4, 2 and 6 teaching trials to criterion on Chart Stories 1 through 7 respectively.

Comments

It should be noted that $\underline{S_3}$ and $\underline{S_4}$ achieved criterion during baseline trials on Chart Stories 1, 2 and 3, while $\underline{S_1}$ and $\underline{S_2}$ required teaching trials on Chart Stories 1 and 3. The performance of $\underline{S_3}$ and $\underline{S_4}$ suggests that $\underline{S_3}$ and $\underline{S_4}$ had again generalized the action responses across groups of words (i.e., phrases to sentences). Whereas, $\underline{S_1}$ and $\underline{S_2}$ required teaching trials which included the use of the verbal cue "Do it."

Phase XI: Sentences with prepositional phrases

The objective of Phase XI was to verify that Ss could, or teach Ss to, read sentences containing prepositional phrases. A total of 18 sentences were divided into 3 sets (A, B, C) each containing 6 sentences. Ss were required to label the sentences in Set A and demonstrate comprehension on two consecutive occasions; label the sentences in Set B and demonstrate comprehension on two consecutive occasions, and label the sentences in Set C and demonstrate comprehension on two consecutive occasions prior to any instruction on Set A, Set B, Set A-B, Set C or Set A-B-C. Measurement of S's ability to perform the skills required in Parts 3, 2 and 1 were obtained on two consecutive occasions in order for T to determine if the Ss could label sentences with prepositions, label prepositions, new verbs and new nouns and perform one component verbal directions.

The performance of Ss in Phase XI is summarized in Table 11. As can be discerned from Table 11:

$\underline{S_1}$ required 0, 4, 8, 4, 2, 4, 3, 2, 2, 0, 3, and 2 teaching trials to criterion on Parts 1A through 4 A-B-C.

$\underline{S_2}$ required 0, 4, 6, 3, 2, 4, 3, 2, 2, 0, 2, and 2 teaching trials to criterion on Part 1A through 4 A-B-C respectively.

Unfortunately, time in the school year did not permit $\underline{S_3}$ and $\underline{S_4}$ to complete Phase XI and Phase XII.

Comments

In Part 1A-B, Ss had considerable difficulty comprehending directions when two sets of directions were combined. When three sets were combined in Part 1A-B-C, only 2 teaching trials were required. It should be noted that when the components of Part 1, Part 2 and Part 3 were combined to form Part 4, Ss required a minimal number of teaching trials in order to reach criterion performance. Thus, it is hypothesized that Ss had generalized across tasks requiring performance in response to verbal directions, and performance in response to written directions.

Phase XII: Chart Stories with prepositional phrases

The objective of Phase XII was to verify that Ss could, or teach Ss to, read 3 one component direction and 3 two component direction chart stories (Sets 1 and 2 respectively). Measurement of the S's abilities to label the words and demonstrate comprehension of the chart stories was obtained on two consecutive occasions in order to determine if the Ss had successfully combined the skills of Phase X and Phase XI. Chart stories were taught to a criterion of a correct labeling and a correct action responding on two consecutive occasions.

The performance of Ss in Phase XII is summarized in Table 12. As can be discerned from Table 12:

S_1 required 2, 3 and 0 teaching trials to criterion on one component direction Chart Stories 8, 9 and 10 respectively.

S_2 required 2, 2 and 0 teaching trials to criterion on one component direction Chart Stories 8, 9 and 10 respectively.

S_3 required 4, 2 and 9 teaching trials to criterion on two component direction Chart Stories 11, 12 and 13 respectively.

S_4 required 6, 6 and 7 teaching trials to criterion on two component direction Chart Stories 11, 12 and 13 respectively.

Comments

S_1 and S_2 experienced little difficulty labeling the words of either of the two sets of chart stories, but did experience difficulty performing the actions required by the two direction chart stories. After modification of the teaching procedures, S_1 and S_2 required only 3 additional teaching trials to reach criterion on two component Chart Story 13.

Discussion

In accordance with the criteria of reading offered, the performance of all students strongly suggests that the major objectives of the program were realized. That is, the four students acquired the basic skills necessary (a) to label forty-three single words, thirty-seven phrases, forty sentences, seven relatively simple chart stories and six more complex chart stories containing one and two component directions with prepositional phrases; and (b) to demonstrate comprehension of those thirteen chart stories in response to material rather than teacher provided cues. Thus, an empirically tenable instructional model for teaching selected basic reading skills to young severely handicapped students was delineated.

The whole word approach to teaching reading as delineated in this model has several distinct advantages: (1) Language skills were developed cumulatively and concommitant with reading skills; (2) The labeling of words in their entirety, without direct references to structural, contextual or phonetic cues, requires sophisticated visual and auditory memory skills, but does not require the precise auditory discrimination and articulation skills necessary to perform phonetic reading skills; (3) Linguistic forms (words, phrases, and sentences) may be readily arranged and/or modified contextually to develop discretely different chart stories; (4) Many components of the whole word approach seem to be efficiently and systematically verifiable; and (5) It has been demonstrated that complex reading skills can be taught to severely handicapped students through various whole word approaches.

In addition to the empirical evidence presented, several changes in related reading and communication skills were observed by the teaching staff. Although anecdotal observations, they merit presentation here. First, the teacher noted increased appropriate use of words (object labels, action words and descriptors), sentences, and length of sentences in expressive oral interactions. Secondly, independent of teacher direction, throughout the school day students would approach reading materials and at least label them. For example, one student approached a teacher during lunch and labeled words on a milk carton "white milk."

On the other hand, the reader must be aware of several limitations of the whole word approach: (1) It is doubtful that the whole word approach will be able to provide young severely handicapped students with knowledge of all the words they will ultimately need to know. It appears that reliance upon the teaching of whole words requires retention abilities far beyond reasonable expectations for young severely handicapped students; (2) The whole word approach does not provide the contextual, structural or phonetic decoding skills necessary to read unfamiliar material in different environments. Thus, instruction on new words would be required in each different environment the student encounters. This, of course, mitigates against the probability of survival in complex community settings.

The whole word approach offered here may be considered as a foundation for the development of the basic reading skills of young severely handicapped students. This program may be extended by the formulation of more complex vocabulary and comprehension related tasks which would expand upon existing reading skills. That is, additional vocabulary may be developed by teaching such decoding skills as:

1) Phonetic Analysis - the development of a repertoire of basic consonant and consonant blends for use in breaking down words;

2) Structural Analysis - the development of a repertoire of base words from which new words can be derived with the addition of roots, prefixes, suffixes and compounds; and

3) Context Cues - the development of the skills necessary to derive word meaning from sentences and pictorial cues.

More complex comprehension skills may be developed through the use of expanded two, three, and four component written directions; teacher provided "wh" question forms; and the use of written comprehension questions requiring either oral or written responses, etc. (Domnie & Brown, 1974; Swetlik & Brown, 1974).

If during the first year of public school at age 5, one student can label forty-three single words, thirty-seven phrases, forty sentences, seven relatively simple chart stories, and six more complex chart stories containing one and two component directions with prepositional phrases, and demonstrate comprehension of those thirteen chart stories without direct assistance of the teacher, obviously he has progressed beyond limitations suggested by Burton (1974); Doll (1941); Goldberg and Rooke (1967); and Kirk (1972). If this reading program and related programs can be expanded in quality and complexity, one can only speculate what behaviors severely handicapped students will have in their repertoires after 15 or more years of public school instruction.

Finally, if generalization does not occur to post school environments, two options seem tenable: (a) continued training beyond what is the currently considered school age; and/or (b) prosthetizing the environment to guarantee generalization and maintenance of skills across settings. The second option seems more desirable as it will enable severely handicapped persons to function in post school community settings as self-actualizing, economically productive citizens.

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Appendix A

Student #1

I. History

A. Sex: Male

B. C.A. as of September 1973: 4 years 8 months

C. I.Q.: 79 M.A.: 3 years 6 months

D. Level of retardation (AAMD): "Higher level of moderately retarded."

E. Medical Diagnosis: "Down's Syndrome, inoperable heart condition, esophageal stricture."

F. Psychological Descriptors: "On the PPVT, $\underline{S}_1$ received a 2-5 M.A. and was reported to have delayed expressive and receptive language." "Handedness not clearly established (5-73)." "He is right handed (10-73)." "Agreeable cooperative youngster for a short period of time."

G. Placement History:

1. Natural Home: Since birth.
2. Day Care Center: Kiddie Camp, Madison, WI. - 1971 to 1973.
3. Public School: Glenn Stephens, Madison, WI. - Since June 1973.

II. Initial Maladaptive Classroom Behavior

Exhibited uncooperative, aggressive behaviors in the play situation. Displays of temper occur later in the school day.

Student #2

I. History

A. Sex: Male

B. C.A. as of September 1973: 4 years 10 months

C. I.Q.: 65 M.A.: 3 years

D. Level of retardation (AAMD): "Mild to moderately retarded."

E. Medical Diagnosis: "Down's Syndrome"

F. Psychological Descriptors: Psychological reports stated he was "right handed" (although $\underline{S}_2$ is definitely left handed). "He has an extensive, single word vocabulary." "He worked slowly, but at a steady pace." "He made a scorable circle on the Binet." On the PPVT, $\underline{S}_2$ received a language age of 2-6 and an M.A. of 3-0. He was described as being "Unusually nice, quiet, well behaved" by the evaluator, but others describe him as "lazy, stubborn, dependent" -- "tries to manipulate others."

G. Placement History:

1. Natural Home: Since birth.
2. Day Care Center: Kiddie Camp, Madison, WI. - 1970-1973
3. Public School: Glenn Stephens, Madison, WI. - Since June 1973

II. Initial Maladaptive Classroom Behaviors

Dependent upon adults for dressing. Will make some attempts to dress self.
He is reserved and tends to play alone.
Exhibits stubborness, but responds well to praise.
Often exhibits inappropriate behaviors. When another S imitates the behavior, he stops, expecting the other child to be timed out.

Student #3

I. History

A. Sex: Male

B. C.A. as of September 1973: 11 years 11 months

C. I.Q.: 32 M.A.: 3 years

D. Level of retardation (AAMD): "Severely retarded."

E. Medical Diagnosis: "Down's Syndrome", wears short leg braces.

F. Psychological Descriptors: "Loud verbal outbursts, subject to temper tantrums, easily excited," "self mutilating, not aware of physical hazards," "quickly imitated examiner's gestures," "speech was difficult to understand." $\underline{S}_3$ passed 2 items at the 3 year 6 month level. He named 10 out of 18 pictures clearly. "Exhibits more positive social interaction with peers, although he still bosses and is aggressive."

G. Placement History:

1. Foster Home: September 1972 to present.
2. Public Institution: Central Wisconsin Colony, Madison, WI. - Birth to September 1972.
3. Day Care Center: Kiddie Camp, Madison, WI. - 1969-1970
4. Public School: Glenn Stephens, Madison, WI. - Since September 1972

II. Initial Maladaptive Classroom Behaviors

Subject to loud excited outbursts.
Must be reminded to sit up.
Exhibited inappropriate hitting behaviors in the room.
Would reply "no" when asked to perform, even though he wanted to be a part of the group.
Displayed temper outbursts, when he was not given what he wanted by his peers.
Would repeat words on flashcard, inflecting "no" after each word or object until he labeled word or object correctly.

Student #4

I. History

A. Sex: Male

B. C.A. as of September 1973: 6 years 6 months

C. I.Q.: 33 M.A.: 2 years 4 months

D. Level of retardation (AAMD): "Severely retarded."

E. Medical Diagnosis: "Down's Syndrome," conductive loss of hearing, chronic respiratory infection, repaired cleft palate and cleft lip. $\underline{S_4}$ has a motoric imbalance due to vision problem -20 in left eye, strong reaction to bright light, occurrences of double vision.

F. Psychological Descriptors: Previous testing had been attempted but was unsuccessful. He achieved a 2-4 M.A. on the Binet, but "strictly speaking no basal age was obtained because he failed one item at the Year II level" "He could name 10 pictures, copy a circle and draw a vertical line, but was quiet and withdrawn." "Directions had to be repeated two to three times before he complied."

G. Placement History:

1. Natural Home: Since birth.
2. Day Care Center: Kiddie Camp, Madison, WI. - 1972-73
3. Public School: Glenn Stephens, Madison, WI. - Since September 1973

II. Initial Maladaptive Classroom Behaviors

He had no eye contact.
He did not interact positively with others.
He could be stubborn, withdrawn and non-compliant, but would establish eye contact on verbal cue.

Appendix B

PHASE I

Part 1

Date ______________

Name ____________________

Teaching Nouns

"What is this?"

____

Trials

	1	2	3	4
bus				
balloon				
wagon				
car				
ball				

Trials

	5	6	7	8

Directions:

Note: Modifications of this data sheet were used for Phase I Parts 2, 3, 4, 5, 6 and 7; Phase II Parts 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10, and Phase VII Parts 1, 2 and 3.

PHASE III Part 1 Date ____________

Name ________________ Teaching Verb-Noun

"Show me push wagon." ________________

	1	2	3	4	5	6
push wagon						
go wagon						
ride wagon						
push bus						
go bus						
ride bus						
push car						
go car						
ride car						
fly balloon						
bounce ball						

	7	8	9	10	11	12

Directions:

Note: Similar data sheets were used for Phase IV Parts 2, 3, 4, 5, 6 and 8. Modifications of this data sheet were made for Parts 7, 9 and 10, which required labeling and touching or labeling and action responses. Modifications were also made for Phase VII, Parts 4, 5, 6 and 7.

PHASE IV Part 1a - 1b Date ______________

Name ____________________ Teaching Adjectives

"What is this color/size?" ______________________________

	1	2	3	4
red				
blue				
orange				
green				
yellow				
purple				
big				
little				

	5	6	7	8

Directions:

Note: Similar data sheets were used for all Parts of Phase IV. Modifications were made when touching and labeling or labeling and touching responses were required.

PHASE V Part 1 Date ______________

Name ____________________ Teaching Adjective Noun

"What is this?" (two word response)

	1		2		3	
red ball						
purple car						
green wagon						
yellow bus						
orange balloon						
little ball						

	1		2		3	

Directions:

Note: Similar data sheets were used for Phase V Parts 2, 3, 4 and 5. Modifications were made according to the type of response required.

PHASE V Part 6 Date ____________

Name ________________ Teaching

What are these words? ________________

	1		2		3	
red car						

	1		2		3	

Directions:

Note: Modifications were made for Parts 7 and 8, where labeling and touching responses were required.

PHASE VI   Part 2   Date

Name   Teaching

Touch the words   . What are these words?

	1				2				3				4			
	T	L			T	L			T	L			T	L		
push red wagon																
ride blue car																
fly orange balloon																
ride yellow bus																
bounce little ball																
push purple car																
fly green balloon																
go blue car																
bounce big ball																
ride red wagon																

Directions:

Note: Similar data sheets were used for all Parts of Phase VI. Modifications were made when a touching response, a labeling response or a labeling and action response were required.

PHASE VIII Part 1 Date ______________

Touch ____________ Teaching Proper Name

1

	JOE	PETE	PAT	TERRY
S_1				
S_2				
S_3				
S_4				

2

JOE	PETE	PAT	TERRY

Directions:

Note: This data sheet was also used for Parts 2 and 4. Modifications were made for Parts 3 and 5 when both touching and labeling or labeling and touching responses were required.

PHASE XI S_1 Date ______________

Part 1

Set A Verbal direction

	B	B	1	2	3	4	5	6	7
put the ball in the cup									
take the ball out of the cup									
put the ball in the bus									
take the ball out of the bus									
put the cup in the sink									
take the cup out of the sink									
pick the ball up									

Directions:

Note: Similar data sheets were used for Sets B and C.

PHASE ________ Part ________ Date __________

Name	Sentences	Action response	Word labeling response	Do
Dan	Fly the big orange balloon.			

Name	Sentences	Action response	Word labeling response	Do

Note: This data sheet and modifications of this data sheet were used for Phase IX, Phase X, Phase XI Parts 3 and 4 and Phase XII.

PHASE XI Name ________ Date ____________

Part 1

Set A & B Verbal direction

	B	B	1	2	3	4	5	6	7	8	9	10		
take the cup out of the sink														
put the cup on the table														
take the cup off the table														
put the cup in the sink														
take the ball out of the cup														
put the ball on the bus														
take the ball off the bus														
put the ball in the cup														
pick the ball up														
put the ball on the table														
take the ball off the table														
put the ball in the bus														
take the ball out of the bus														

Directions:

PHASE XI　　　　Name ____________　　　　Date ____________

Part 1

Set　A B C　　　　Verbal directions

	B	B	1	2	3	4	5	6	7	8	9	10			
take the cup off the table															
take the cup to the sink															
put the cup in the sink															
take the cup out of the sink															
bring the cup from the sink															
give the cup to Don															
put the cup on the table															
get the cup from Don															
take the ball off the table															
put the ball on the table															
take the ball off the bus															
put the ball in the bus															
take the ball out of the bus															
give the ball to Don															
put the ball in the cup															
take the ball out of the cup															
put the ball on the table															
get the ball from the bus															

Directions:

PHASE XI

Part 2

Name ____________________ Date ______________

Teaching

label words

	B	B	1	2	3	4
on						
out						
off						
to						
from						
up						
get						
give						
take						
in						
put						

____

	B	B	1	2	3	4
pick						
bring						

Directions:

Note: Data sheets used in Phase I were also used for the names taught in Phase XI.

APPENDIX C

Table 1

Phase I

Students	Parts 1	2	3	4	5	6	7
S_1	0	0	0	2	0	2	2
S_2	0	0	0	0	0	3	2
S_3	2	2	0	12	6	2	2
S_4	2	2	2	2	2	2	2

Table 2

Phase II

	Parts 1	2	3	4	5	6	7	8	9	10
S_1	3	3	4	3	3	4	3	3	3	5
S_2	3	5	3	4	5	3	3	3	3	4
S_3	7	7	9	4	6	8	4	4	8	6
S_4	8	5	11	10	10	3	3	3	7	8

Table 3

Phase III

	Parts 1	2	3	4	5	6	7	8	9	10
S_1	0	0	0	0	0	0	0	0	0	2
S_2	0	0	0	0	0	0	0	0	0	2
S_3	0	7	3	0	0	0	7	5	2	6
S_4	0	6	4	5	5	3	4	6	7	6

Table 4

Phase IV

	Parts 1a	1b	2a	2b	3	4	5	6	7	8
S_1	5	2	0	0	0	0	0	0	0	2
S_2	5	5	0	0	0	0	0	0	2	2
S_3	2	2	2	2	2	2	2	6	2	4
S_4	0	0	0	0	0	4	3	2	4	2

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Table 5

Phase V

	Parts							
	1	2	3	4	5	6	7	8
S_1	4	0	0	0	0	2	2	2
S_2	0	0	0	0	0	0	0	0
S_3	0	0	0	0	0	3	4	4
S_4	4	8	0	4	5	6	2	4

Table 6

Phase VI

	Parts				
	1	2	3	4	5
S_1	0	0	0	0	0
S_2	0	0	2	3	2
S_3	3	3	4	0	4
S_4	0	0	0	0	5

Table 7

Phase VII

	Parts						
	1	2	3	4	5	6	7
S_1	0	0	0	0	0	0	0
S_2	2	0	0	0	0	0	2
S_3	2	2	7	2	6	2	2
S_4	0	0	2	2	6	2	4

Table 8

Phase VIII

	Parts				
	1	2	3	4	5
S_1	0	0	0	0	0
S_2	0	0	0	0	0
S_3	0	0	0	0	0
S_4	0	2	0	0	0

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Table 9

Phase IX

	Parts			
	1	2	3	4
S_1	0	0	0	4
S_2	0	9	0	2
S_3	0	0	0	5
S_4	2	0	0	3

Table 10

Phase X

	Chart Stories						
	1	2	3	4	5	6	7
S_1	2	0	3	0	0	2	3
S_2	2	0	2	2	0	3	3
S_3	0	0	0	5	5	4	4
S_4	0	0	0	9	4	7	6

Table 11

Phase XI

	Parts											
	1A	1B	1AB	1C	1ABC	2	3	4A	4B	4AB	4C	4ABC
S_1	0	4	8	4	2	4	3	2	2	0	3	2
S_2	0	4	6	3	2	4	3	2	2	0	2	2

Table 12

Phase XII

	Chart Story Set A		
	8	9	10
S_1	2	3	0
S_2	2	2	0

Phase XII

	Chart Story Set B		
	11	12	13
S_1	4	2	9
S_2	6	6	7

TEACHING SEVERELY HANDICAPPED STUDENTS BASIC READING COMPREHENSION SKILLS REQUIRING PRINTED ANSWERS TO WHO, WHAT AND WHERE QUESTIONS

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Despite past and present judgments to the contrary (Burton, 1974; Doll, 1941; Goldberg and Rooke, 1967; Kirk, 1972) severely handicapped students are intellectually capable of acquiring many complex academic skills that are related to ultimate survival in a community living setting (Sontag, Burke, & York, 1973). There is little doubt that the ability to read, write, compute, speak, self-recreate, etc. enhances substantially the variety and substance of life experiences of people in our society.

In the recent past, several teaching programs have been reported that have demonstrated that severely handicapped students can acquire a variety of basic reading skills (Brown and Perlmutter, 1971; Domnie and Bellamy, 1972; Brown, Jones, Troccolo, Heiser and Bellamy, 1972; Brown, Huppler, Pierce, York and Sontag, 1973). Most of these programs have used what may be referred to as "a whole word approach." When these programs are considered in relation to the need to develop longitudinal community survival reading skills, while encouraging, they have not accounted for or addressed at least the following crucial developmental considerations: First, these programs were dependent upon the sustained physical presence of instructional staff throughout all teaching and criterion measurement phases. For example, in a program reported by Brown and Perlmutter (1971) students in the criterion measurement phase were instructed to label words in sentences, and after having labeled the words in sentences were then instructed to touch objects referred to in the sentences. Thus, while this program demonstrated that severely handicapped students could acquire selected reading skills, it certainly did not demonstrate that the students independently could acquire information from printed material.

Second, reading comprehension in these programs was measured by requiring the students to touch or perform specific actions referred to in the printed material. Domnie and Bellamy (1972) reported a program in which severely handicapped students were instructed to label the words in a sentence (e.g., The ball is yellow and green.).

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The students were then instructed to locate and touch the specific object which was attached to a board containing many different objects. Brown, Huppler, Pierce, York and Sontag (1973) reported a program whereby severely handicapped students were taught to label words (e.g., sit, run, write, color) and then perform the actions indicated by those words. While a touch response may be a relevant measure of reading comprehension at one stage of a student's development, it would be, at best, an incomplete measure at a more advanced stage. The physical performance of directed actions is a relevant measure of reading comprehension at all stages of development (e.g., assembling of a model airplane, sewing and cooking from printed directions, delivering mail, functioning as a stock clerk, etc.). However, there are situations where such a measure is of questionable applicability (e.g., many kinds of pleasure reading; completing a personal check; responding to an inquiry about a movie). In other words survival in community living arrangements will be enhanced by reading skills in addition to those that require the "acting out" of printed directions in the presence of another person.

Third, teachers directly provided content attack information by verbally asking questions related to the printed material. Brown, Jones, Trocollo, Heiser and Bellamy (1972) reported a noun reading program in which severely handicapped students were presented with a word and a group of objects and were given the cue "What is this word?" After the students labeled the word they were given the additional cue "Touch it" (meaning touch the object labeled). Thus, the printed cues were not the only cues to which the students responded. Comprehension was measured by the student's ability to label words and touch objects in the presence of teaching personnel and were dependent upon the teachers providing specific verbal cues. In many community living settings a person has to determine the relevant information in printed material without the direct assistance of another person. Consequently one content attack skill that a person might use to secure information in printed material would be to ask relevant questions concerning the material. Here students were directed to print answers to Who, What and Where questions after reading a story that contained basically little more than who, what and where information. Extraneous descriptive information was minimal and there were no sentences included in any story that did not contain an answer to one of three questions.

Thus, of four major methods of establishing the comprehension of printed material: touching, acting out, verbally reporting and providing a written report, the programs referred to above did not account for or address the provision of verbal or written reports. This program was designed in an attempt to provide reading comprehension skills that are minimally reliant upon the physical presence of instructional personnel and not reliant upon the direct physical performance of directed actions or upon touch responses. In other words a major objective of this program was to teach severely handicapped students to label words as they occurred in stories, to label words as they occurred in questions, and to write answers to the questions without the physical assistance of instructional personnel. More specifically, a task analysis of the program is as follows:

Phase I: Teaching students to verbally label 90 printed vocabulary words.

Phase II: Teaching students to copy 40 potential components of answers to printed Who, What and Where questions.

Phase III: Teaching students to, or verifying that students could, label words as they occurred in stories.

Phase IV: Teaching students to, or verifying that students could, label words as they occurred in a list of printed questions.

Phase V: Teaching students to, or verifying that students could, label words as they occurred in stories; label words as they occurred in who, what and where questions pertaining to the stories; and write answers to who, what and where questions pertaining to the stories correctly.

An additional objective relates to the degree of confidence a teacher must assume about the generalization of reading skills to non-classroom settings and to information not specifically included in teaching materials. That is, it would be quite instructionally cumbersome for a teacher to have to teach each student to read each word in each situational context in which that word might appear. The procedures used here to approximate an acceptable degree of confidence were as follows:

a. In Phase I the students were taught to label ninety different vocabulary words.

b. In Phase V those words were arranged in ten different stories and the students were required to answer a Who, a What and a Where question pertaining to many of the stories.

c. It was assumed that when the students were asked to write answers to questions pertaining to a story for the first time, they would make a number of errors. These errors would then be corrected. Subsequently, it was assumed that as the students progressed across stories they would make fewer and fewer errors until they would demonstrate the ability to answer questions pertaining to stories without assistance from the teacher. At least two obvious extensions of these assumptions are that (a) the original ninety words could be arranged in other syntactically and semantically acceptable stories and the students would be able to read those as well; and (b) that new words added to the basic list would enhance the number of possible combinations considerably.

METHOD

Students (Ss):

The 4 Ss (S_1, S_2, S_3, & S_4) ranged in chronological age from 10.5 to 14.7 years ($\bar{X}$ = 12.6) in I.Q. score from 43 to 47 ($\bar{X}$ = 45) and in length of time in public school programs for trainable level retarded students from 5 to 8 years ($\bar{X}$ = 6.5). According to available medical information, 3 Ss were diagnosed as having Down's Syndrome and one S incurred brain damage at birth. Additional information obtained from cumulative folders contained such descriptors as "severely retarded," "specific weakness in vocabulary skills," and "distractable."

Instructional Materials and Teaching Arrangement

Phase I:

Instructional Materials:

In Phase I the following instructional materials were utilized:

A) Ninety 3" x 5" flashcards each containing a printed word were constructed. The words selected were judged basic to almost all beginning reading materials. A few words were selected for their possible enrichment effects in that they probably would afford subsequent stories greater interest value. A listing of the 90 words follows:

Vicki
wants
candy
goes
to
the
store
buys
a
chocolate
bar
Jeff
is
lost
he
name
and
address
takes
home
likes
animals
going
zoo
will
feed
big
black
bears
Bobs
see
tiger
Scott
falls
down
on
sidewalk
hurts
leg
mother
him
doctor's
office
John
has
tell
have
buttered
popcorn
Terry
hot
go
lake
swim
Paul
sick
stomach
ache
doctor
Kristin
hamburger
boy
Scott's
birthday
party
bringing
red
kite
take
like
who
eat
what
where
buy

tells
policeman
his
in
car
circus
some
money
does
hungary
restaurant
eats
he
she
She

B) A sample data sheet used to record student progress in Phase I is presented in Appendix A1.

Teaching Arrangement:

When Phase I was initiated, the teacher (T) and Ss were seated around a trapezoidal classroom table. The 90 words were randomly divided into 9 sets of 10 words each (Baseline Sets I-IX). Words Ss did not label correctly in baseline tests were then divided into sets of 10 (Teaching Sets). It should be noted that 2 Ss were assigned one Teaching Set of less than 10 words. Finally, if an S reached criterion on a word in the Baseline Sets or as an S reached criterion on Teaching Sets, those words and Teaching Sets were placed in a large Review Set. As one S was receiving instruction on a Teaching Set, the remaining Ss were asked to study one of their Teaching Sets until it was their turn to receive instruction.

Phase II:

Instructional Materials:

In Phase II the following instructional materials were utilized:

A) Four worksheet masters each containing a different group of 10 potential answer components were constructed. These worksheets were arranged so that model words could be easily copied by Ss. An example of a worksheet is contained in Appendix A2. A listing of the 4 groups of potential answer components follows:

Group I	Group II	Group III	Group IV
lake	office	Scott	bears
swim	leg	hamburger	ache
popcorn	Bob	Vicki	stomach
John	circus	restaurant	doctor
buttered	Terry	and	Paul
store	Scott's	chocolate	home
candy	birthday	bar	kite
black	party	address	red
big	Kristin	name	Jeff
the	tiger	doctor's	300

B) A sample worksheet used to record student progress in Phase II is presented in Appendix A2.

Teaching Arrangement:

When Phase II was initiated, T and Ss were seated around a trapezoidal classroom table. As Ss finished their worksheets, they raised their hands. T would then correct the worksheets individually.

Phase III:

Instructional Materials:

In Phase III the following instructional materials were utilized:

A) Ten 5" x 8" cards, each containing a printed story were constructed. The stories were developed from the vocabulary words taught in Phase I. The 10 stories (Stories I-X) are presented in Appendix A-3.

B) A sample data sheet used to record student progress in Phase III is presented in Appendix A-3.

Teaching Arrangement:

When Phase III was initiated T worked with each S individually at a trapezoidal classroom table.

Phase IV:

Instructional Materials:

In Phase IV the following instructional materials were utilized:

A) Ten 5" x 8" question worksheets (I-X) each containing 3 "wh" questions were constructed. Each of the questions were based upon the content of the 10 stories used in Phase III. The question worksheets are presented in Appendix A-4.

B) A sample question worksheet used to record student progress in Phase IV is presented in Appendix A-4.

Teaching Arrangement:

When Phase IV was initiated T worked with each S individually at a trapezoidal classroom table.

Phase V:

Instructional Materials:

The instructional materials utilized in Phase V were described in Phases III and IV. A sample data sheet used to describe student progress in Phase V is presented in Appendix A-5.

Teaching Arrangement:

When Phase V was initiated *Ss* were seated at their classroom desks and *T* worked with each *S* individually.

Teaching Procedures

Phase I: Verbally labeling vocabulary words.

Baseline Procedures:

Each *S*'s ability to label the 90 words was obtained prior to instruction. As stated previously, for baseline measurement purposes the 90 words were randomly arranged into 9 *Baseline Sets* of 10 words. Baseline measures were obtained as follows: *T* presented the first word of *Baseline Set I* to S_1 and said "What is this word?" If S_1 labeled the word correctly, a "+" was marked in the appropriate box on the data sheet. If *S* labeled the word incorrectly, a "-" was marked on the data sheet. It should be noted that no indication of accuracy was provided. *T* proceeded in this manner until all 10 words of *Baseline Set I* had been presented to S_1. *Baseline Set II* was then administered to S_2 and *Baseline Set III* to S_3, etc. This procedure was followed until each *S* had responded to each of the 9 *Baseline Sets* on 2 consecutive occasions. Words that *Ss* did not label correctly in 2 consecutive baseline trials were then randomly divided into *Teaching Sets* of 10 words each. Those words in the *Baseline Sets* that were labeled correctly twice in succession were placed into individual *S*'s *Review Set* (see review procedures below).

Teaching Procedure:

T presented each *S* with an individualized *Teaching Set* of 10 words. *T* then said to *Ss* 2, 3, & 4, "Here are your words for today. You may study them quietly until it is your turn." *T* then presented S_1 with the first word from his/her *Teaching Set I* and said, "What is this word?" If S_1 correctly labeled the word, *T* provided S_1 with appropriate verbal praise and marked a "+" in the appropriate box on the data sheet. If *S* labeled the word incorrectly, *T* scored a "-" on the data sheet and said "No, this word is *(correct label)*." *T* then repeated the cue, "What is this word?" If S_1 labeled the word correctly, *T* provided appropriate verbal praise but did not record a "+" on the data sheet. If S_1 did not label the word correctly, *T* said, "No, this word is *(correct label)*, say *(correct label)*." If *S* labeled the word correctly *T* provided appropriate verbal praise but did not record a "+" on the data sheet. If S_1 still did not label the word correctly, *T* presented a second word in *Teaching Set I* and followed the same teaching procedure. This procedure was followed until S_1 had the opportunity to respond to and receive instruction on each of the 10 words in *Teaching Set I*. Subsequently, S_1 was advised to study his/her words and *T* presented S_2 with the first word in his/her *Teaching Set I*. These procedures were followed until an *S* reached criterion on his/her *Teaching Set I*. When an *S* reached criterion on a *Teaching Set*, the words in that set were then added to his/her *Review Set* and review procedures were initiated.

Review Procedures:

All words an *S* had labeled correctly on both baseline trials were entitled his/her *Review Set*. In addition, when an *S* reached criterion on a *Teaching Set*, the 10 words in that *Teaching Set* were added to the *Review Set*. A culminative review was then administered to an *S* on his/her individualized *Review Set*. If an *S* labeled all of the words in his/her *Review Set*, he/she then received instruction on the next *Teaching Set*. If an *S* did not label a word in the *Review Set* correctly, the word labeling teaching procedures described above were implemented. These procedures were operative until an *S* labeled all the words in his/her *Review Set*. Subsequently, instruction on the next *Teaching Set* was initiated.

The above Teaching and Review Procedures were followed until each *S* correctly labeled the 90 vocabulary words on 2 consecutive occasions.

Phase II: *Copying 40 potential answer components*.

Baseline Procedures:

S's initial ability to copy 40 potential answer components was obtained in the following manner: *T* presented the worksheet for *Group I* to S_1 and said, "Here is a worksheet for you to do. Look at each word and then carefully copy that word on the line below it. When you finish copying all the words, raise your hand." Different worksheets were given to *Ss* and *T* repeated the instructional cues for each *S* in turn. When an *S* raised his/her hand to indicate he/she had finished, *T* collected that worksheet and said "Thank you." No indication of the accuracy of the copying was provided during baseline procedures. These procedures were followed until each S had the opportunity to copy the words in *Groups I*, *II*, *III*, and *IV* on two occasions.

Teaching Procedure:

T presented the worksheet for *Group I* to S_1 and said, "Here is a worksheet for you to do. Look at each word and then carefully write that word on the line below it. When you finish writing all the words, raise your hand." Different worksheets were dispensed and *T* repeated the instructional cues for each *S* in turn.

When S_1 raised his/her hand, *T* checked the worksheet by placing a "+" mark beside each word correctly copied:

A) If S_1 copied all the words correctly, *T* dispensed appropriate verbal praise.

B) If S_1 did not copy all the words correctly, *T* erased each incorrect word and said, "You did not copy this/these word(s) correctly, copy this/these word(s) again and be careful. When you finish, raise your hand."

C) When S_1 again raised his/her hand, *T* checked the corrected word(s). If S_1 correctly copied the word(s) the second time, *T* said "That's better, now you have copied the word(s) the right way."

D) If S_1 did not copy the word(s) correctly *T* said, "No, that's still not right" and erased the incorrect word. *T* then said "Watch me." *T* then copied the word while S_1 watched. *T* then said, "Now you copy the word beside mine." If *S* matched *T*'s written model *T* said, "Yes, now you have written that word correctly." If S_1 did not correctly match *T*'s written model, *T* intervened as soon as S_1 made an error, erased the incorrectly copied letter and said "Write *(letter)*." as *T* pointed to that letter in the printed model. *T* then said, "Now write *(letter)* etc." as *T* pointed to the next letter in the printed model, until the word was copied correctly. *T* then said, "Now you have written the word correctly."

This procedure was followed until each *S* correctly copied the 10 words in *Groups I*, *II*, *III*, and *IV* on two consecutive occasions.

Phase III: Labeling printed stories.

Baseline Procedures:

S's ability to label vocabulary words as they occurred in printed stories was assessed in the following manner: *T* presented *Story I* to S_1 and said "Read all the words in this story to me." When S_1 finished *Story I*, *T* removed it and said "Thank you." *T* then presented *Story II* to S_1 and repeated the instructional cue. This procedure was followed until S_1 had responded to all 10 stories. Subsequently, the same procedures were followed with the remaining 3 *Ss* until each had the opportunity to label the stories on two occasions.

Teaching Procedure:

T presented *Story I* to S_1 and said, "Read all the words in this story to me." If S_1 labeled each word correctly in the story beginning with the top line and going left to right across each successive line, a "0" was marked beside "# of errors" on the data sheet and S_1 was given appropriate verbal praise. If S_1 made a labeling error or a sequence error he/she was stopped immediately, the location of the error was circled on the data sheet, and the following procedures were implemented:

Sequence Errors

A) If S_1 did not label the words in the appropriate top line to bottom line-left to right sequence, *T* intervened as soon as S_1 made an error in the labeling sequence and said, "No, that's not right. Don't skip any words. Start that line over." If S_1 re-labeled the words in the appropriate sequence, *T* said, "That's better, you didn't skip any words that time."

B) If S_1 again made an error in the labeling sequence, *T* intervened as soon as S_1 made the error and said, "No, don't skip any words." *T* then modeled the correct labeling sequence from the beginning of the line in which the error occurred to the end of that line. Then *T* said to S_1, "Now you read the words." If S_1 imitated *T*'s model by labeling the words correctly, *T* dispensed appropriate verbal praise. If S_1 still made an error in the labeling sequence *T* said, "No, you still skipped a word. Say each word after I say it." *T* then modeled each word in that line and S_1 repeated each word following *T*'s model. If S_1 again made an error, *T* removed *Story I* and presented *Story II*.

Labeling Errors

If S_1 labeled a word in Story I incorrectly, T intervened as soon as the error was made and said, "No, that word is wrong, read that word again." If S_1 labeled the word correctly, T said, "That's better, now go back and start that line again." That is, S_1 was requested to return to the initial word in the line where the error occurred and re-label all the words in that line. If, after the initial error S_1 did not re-label the word correctly, T intervened and said, "No, that word is (correct label)." T then directed S_1 to return to the initial word in the line and re-label all the words in that line. If S_1 did not re-label the word correctly, T stopped S_1 and said, "No, that word is (correct label). What is that word?" If S_1 repeated the label correctly, T said, "Good, now go back and start that line again." If S_1 did not repeat T's label correctly, T removed Story I from S_1 and presented Story II.

These procedures were followed until each S correctly labeled the words in the 10 stories in the appropriate order on 2 consecutive occasions.

Phase IV: Labeling printed questions.

Baseline Procedures:

S's initial ability to label vocabulary words as they occurred in printed questions was assessed in the following manner: T presented Question Worksheet I to S_1 and said, "Read all the words on this worksheet to me." When S_1 finished Question Worksheet I, T removed it and said "Thank you." T then presented Question Worksheet II to S_1 and repeated the instructional cues. This procedure was repeated until S_1 had responded to the Question Worksheets I through X.

Worksheets I through X.

Baseline measures were obtained in this manner with each S as he/she entered Phase IV of the program.

Teaching Procedure:

T presented Question Worksheet I to S_1 and said, "Read all the words on this worksheet to me." If S_1 labeled each word correctly beginning with the top line and going left to right across each successive line, a "0" was marked beside the "# of errors" on the data sheet and appropriate verbal praise was provided. If S_1 made a labeling or a sequence error he/she was stopped immediately. The point of error was circled on Question Worksheet I data sheet and the following procedures were implemented:

Sequence Errors - (See Phase III - Teaching Procedures)

Labeling Errors - (See Phase III - Teaching Procedures)

These procedures were followed until each S correctly labeled the words on Question Worksheets I-X in the appropriate order on 2 consecutive occasions.

Phase V: Labeling printed stories and printed who, what, where questions, and then writing answers to who, what and where questions pertaining to the printed stories.

Baseline Procedures:

S's initial ability to write the answers to printed who, what and where questions pertaining to printed stories was assessed in the following manner: T presented Story I and Question Worksheet I to S_1 and said, "Read the story; then read questions 1, 2, and 3; and then write the answer to each question on the line. When you finish raise your hand." When S_1 raised his/her hand, T removed Story I and Question Worksheet I, presented S_1 with Story II and Question Worksheet II and repeated the instructional cues. This procedure was followed until S_1 had the opportunity to write the answers to the questions on Question Worksheets I-X. Those procedures were also used to obtain the initial performance level of the remaining Ss.

Teaching Procedure:

T presented Story I and Question Worksheet I to S_1 and said, "Read the story; read Questions 1, 2, and 3, and then write the answer to each question on the lines. When you finish, raise your hand."

A) When S_1 raised his/her hand, T examined Question Worksheet I. If S_1 had written the correct answers to questions 1, 2, and 3, T placed a "+" beside each correct answer and dispensed appropriate verbal praise. T also placed "+" marks in the appropriate boxes on the data sheet.

B) If S_1 did not write the correct answers to questions 1, 2, and/or 3, T placed a "-" in the appropriate boxes on the data sheet and said, "No, that/these answer(s) is/are not right (as T erased the incorrect answer(s)." T then repeated the initial directive, "Read the story again, then read the/these question(s) and write the answer(s) on the line. After you write the answer(s) to this/these questions, raise your hand."

C) When S_1 raised his/her hand, *T* went to his/her desk. If S_1 had corrected the initial answers, *T* said, "That's better, now you have written the correct answer(s)."

D) If S_1 did not correct the initial answer(s), *T* said, "No, that/these answer(s) is/are not right (as T erased the incorrect answer(s)." T then said, "Read the story to me." If S_1 made a labeling or sequencing error while reading the story, the correctional procedures utilized in Phase III were implemented.

E) After S_1 read *Story I* aloud, *T* said, "Now read question *(# of question)* to me." If *S* made a labeling or sequencing error while reading a question, the correctional procedures utilized in Phase IV were implemented.

F) After S_1 read the specific question aloud *T* said, "Now touch the answer in the story and read it." If S_1 correctly touched and labeled the answer, *T* said, "That's the answer, write that word on the line." If S_1 touched the appropriate answer word, but mislabeled it, *T* modeled the correct label and instructed S_1 to imitate. *T* then said, "That's the answer, write that word on the line."

G) If S_1 touched and labeled the wrong word, *T* said, "No, that's not the answer, listen to me." *T* then read the question aloud; read the line of the story which included the answer; touched and labeled the answer; and then said to S_1, "Write this word on the line for question *(# of question)*." If S_1 did so, *T* said, "Now you have written the right answer to question *(# of question)*."

H) If S_1 did not accurately copy the word *T* touched, *T* erased *S*'s word and wrote the word correctly on the appropriate line. *T* then said, "There, that's the correct answer to question *(# of question)*." *T* again presented S_1 with *Story I* and *Question Worksheet I* and another trial was conducted. This procedure was followed until S_1 was able to write the correct answers required by *Question Worksheet I* on 2 consecutive occasions.

These teaching procedures were followed until *Ss* reached criterion on Phase V of the program.

RESULTS

Measures of each *S*'s ability to perform the skills required in each of the 5 Phases I-V were obtained prior to (baseline) and during instruction (teaching). A general design of the entire program is outlined as follows:

1. Baseline Phase V
2. Baseline Phase I
3. Teach Phase I
4. Baseline Phase II
5. Teach Phase II
6. Baseline Phase III
7. Teach Phase III
8. Baseline Phase IV
9. Teach Phase IV
10. Re-Baseline Phase V
11. Teach Phase V

Phase I: Teaching Ss to verbally label 90 printed vocabulary words.

The objective of Phase I was to teach *Ss* to label 90 vocabulary words. Initially, *Ss* were given 2 opportunities to label each of the 90 words. During these baseline trials, *Ss* were required to label a word correctly on 2 consecutive occasions in order for *T* to determine that they could label that word correctly.

When the words not labeled correctly on the baseline trials were divided into individualized Teaching Sets, *Ss* were required to label *all* the words in a Teaching Set on 3 consecutive occasions before *T* determined that they could label the words in a particular set correctly.

Finally, as *Ss* performed at criterion on words in the Baseline and Teaching Sets, those words were placed in an ever increasing Review Set. *Ss* were required to label all the words in the Review Set on 1 occasion before *T* determined that they could label all the words in the Review Set correctly.

S_1

The performance of S_1 is graphically depicted in Figure A-1 and can be summarized as follows:

Baseline: S_1 labeled 40 words correctly in the 2 consecutive baseline trials (Figure A-1, Part A).

Teaching Set I: S_1 reached criterion performance after 6 teaching trials (Figure A-1, Part B).

Review Set I: S_1 performed at criterion on the 50 words in the Review Set during trial 9 (Figure A-1, Part C).

Teaching Set II: S_1 achieved criterion after 6 teaching trials (Figure A-1, Part D).

Review Set II: S_1 achieved criterion on the 60 words in Review Set II at trial 18 (Figure A-1, Part E).

Teaching Set III: S_1 achieved criterion after 8 teaching trials (Figure A-1, Part F).

Review Set III: S_1 achieved criterion on the 70 words in Review Set III at trial 28 (Figure A-1, Part G).

Teaching Set IV: S_1 achieved criterion after 7 teaching trials (Figure A-1, Part H).

Review Set IV: S_1 achieved criterion on the 80 words in Review Set IV at trial 37 (Figure A-1, Part I).

Teaching Set V: S_1 achieved criterion after 6 teaching trials (Figure A-1, Part J).

Review Set V: S_1 achieved criterion on 90 words in Review Set V at trial 44 (Figure A-1, Part K).

S_2

The performance of S_2 is graphically depicted in Figure A-2 and can be summarized as follows:

Baseline: S_2 labeled 40 words correctly on 2 baseline trials (Figure A-2, Part A).

Teaching Set I: S_2 achieved criterion after 6 teaching trials (Figure A-2, Part B).

Review Set I: S_2 achieved criterion on the 50 words in Review Set I at trial 10 (Figure A-2, Part C).

Teaching Set II: S_2 achieved criterion after 9 teaching trials (Figure A-2, Part D).

Review Set II: S_2 achieved criterion on the 60 words in Review Set II at trial 21 (Figure A-2, Part E).

Teaching Set III: S_2 achieved criterion after 7 teaching trials (Figure A-2, Part F).

Review Set III: S_2 achieved criterion on the 70 words in Review Set III at trial 30 (Figure A-2, Part G).

Teaching Set IV: S_2 achieved criterion after 6 teaching trials (Figure A-2, Part H).

Review Set IV: S_2 achieved criterion on the 80 words in Review Set IV at trial 38 (Figure A-2, Part I).

Teaching Set V: S_2 achieved criterion after 5 teaching trials (Figure A-2, Part J).

Review Set V: S_2 achieved criterion on the 90 words in Review Set V at trial 44 (Figure A-2, Part K).

S_3

The performance of S_3 is graphically depicted in Figure A-3 and can be summarized as follows:

Baseline: S_3 labeled 27 words correctly in the 2 consecutive baseline trials (Figure A-3, Part A).

Teaching Set I: S_3 achieved criterion after 8 teaching trials (Figure A-3, Part B).

Review Set I: S_3 achieved criterion on the 37 words in Review Set I at trial 12 (Figure A-3, Part C).

Teaching Set II: S_3 achieved criterion after 9 teaching trials (Figure A-3, Part D).

Review Set II: S_3 achieved criterion on the 47 words in Review Set II at trial 22 (Figure A-3, Part E).

Teaching Set III: S_3 achieved criterion after 6 teaching trials (Figure A-3, Part F).

Review Set III: S_3 achieved criterion on the 57 words in Review Set III at trial 29 (Figure A-3, Part G).

Teaching Set IV: S_3 achieved criterion after 6 teaching trials (Figure A-3, Part H).

Review Set IV: S_3 achieved criterion on the 67 words in Review Set IV at trial 36 (Figure A-3, Part I).

Teaching Set V: S_3 achieved criterion after 6 teaching trials (Figure A-3, Part J).

Review Set V: S_3 achieved criterion on the 77 words in Review Set V at trial 43 (Figure A-3, Part K).

Teaching Set VI: S_3 achieved criterion after 4 teaching trials (Figure A-3, Part L).

Review Set VI: S_3 achieved criterion on the 87 words in Review Set VI at trial 48 (Figure A-3, Part M).

Teaching Set VII: S_3 achieved criterion (3 word set) in 4 teaching trials (Figure A-3, Part N).

Review Set VII: S_3 achieved criterion on 90 words in Review Set VII at trial 53 (Figure A-3, Part O).

$\underline{S_4}$

The performance of $\underline{S_4}$ is graphically depicted in Figure A-4 and can be summarized as follows:

Baseline: $\underline{S_4}$ labeled 25 words correctly in the 2 consecutive baseline trials (Figure A-4, Part A).

Teaching Set I: $\underline{S_4}$ achieved criterion after 7 teaching trials (Figure A-4, Part B).

Review Set I: $\underline{S_4}$ achieved criterion on the 35 words in Review Set I at trial 11 (Figure A-4, Part C).

Teaching Set II: $\underline{S_4}$ achieved criterion after 10 teaching trials (Figure A-4, Part D).

Review Set II: $\underline{S_4}$ achieved criterion on the 45 words in Review Set II at trial 23 (Figure A-4, Part E).

Teaching Set III: $\underline{S_4}$ achieved criterion after 9 teaching trials (Figure A-4, Part F).

Review Set III: $\underline{S_4}$ achieved criterion on the 55 words in Review Set III at trial 33 (Figure A-4, Part G).

Teaching Set IV: $\underline{S_4}$ achieved criterion after 7 teaching trials (Figure A-4, Part H).

Review Set IV: $\underline{S_4}$ achieved criterion on the 65 words in Review Set IV at trial 42 (Figure A-4, Part I).

Teaching Set V: $\underline{S_4}$ achieved criterion after 9 teaching trials (Figure A-4, Part J).

Review Set V: $\underline{S_4}$ achieved criterion on the 75 words in Review Set V at trial 52 (Figure A-4, Part K).

Teaching Set VI: $\underline{S_4}$ achieved criterion after 8 teaching trials (Figure A-4, Part L).

Review Set VI: $\underline{S_4}$ achieved criterion on the 85 words in Review Set VI at 61 (Figure A-4, Part M).

Teaching Set VII: S_4 achieved criterion (5 word set) after 8 teaching trials (Figure A-4, Part N).

Review Set VII: $\underline{S_4}$ achieved criterion on the 90 words in Review Set VII at trial 70 (Figure A-4, Part O).

Phase II: Teaching Ss to copy 40 potential components of answers to printed who, what and where questions.

The objective of Phase II was to verify that Ss could, or to teach Ss to, copy the words that they would be expected to print on answer sheets in Phase V. As was noted previously, a total of 40 potential answer components were divided into 4 groups of 10 words each. Ss were required to copy the 10 words in groups of 3 consecutive occasions in order for T to determine that Ss could copy those words correctly.

S_1

The performance of S_1 is not graphically depicted but can be summarized as follows:

Baseline:

Group I: S_1 copied 8 of 10 words correctly on 2 occasions.

Group II: S_1 copied all 10 words correctly on 2 occasions.

Group III: S_1 copied 7 of 10 words correctly on 1 occasion and 8 of 10 words correctly on a second occasion.

Group IV: S_1 copied all 10 words correctly on 2 occasions.

Teaching:

Group I: S_1 achieved criterion after 3 teaching trials.

Group II: S_1 achieved criterion after 8 teaching trials.

Group III: S_1 achieved criterion after 3 teaching trials.

Group IV: S_1 achieved criterion after 3 teaching trials.

S_2

The performance of S_2 is not graphically depicted but can be summarized as follows:

Baseline:

Group I: S_2 copied 7 words correctly on 1 occasion and 8 words correctly on a second occasion.

Group II: S_2 copied 7 words correctly on 2 occasions.

Group III: S_2 copied 7 words correctly on 2 occasions.

Group IV: S_2 copied 7 words correctly on 1 occasion and 8 words correctly on a second occasion.

Teaching:

Group I: S_2 achieved criterion after 6 teaching trials.

Group II: S_2 achieved criterion after 3 teaching trials.

Group III: S_2 achieved criterion after 6 teaching trials.

Group IV: S_2 achieved criterion after 3 teaching trials.

S_3

The performance of S_3 is not graphically depicted but can be summarized as follows:

Baseline:

Group I: S_3 copied 9 words correctly on 2 occasions.

Group II: S_3 copied 9 words correctly on 2 occasions.

Group III: S_3 copied 10 words correctly on 2 occasions.

Group IV: S_3 copied 10 words correctly on 1 occasion and a word correctly on a second occasion.

Teaching:

Group I: S_3 achieved criterion after 3 teaching trials.

Group II: S_3 achieved criterion after 5 teaching trials.

Group III: S_3 achieved criterion after 3 teaching trials.

Group IV: S_3 achieved criterion after 3 teaching trials.

S_4

The performance of S_4 is not graphically depicted but can be summarized as follows:

Baseline:

Group I: S_4 copied 9 words correctly on 1 occasion and 8 words correctly a second occasion.

Group II: S_4 copied 9 words correctly on 1 occasion and 10 words correctly a second occasion.

Group III: S_4 copied 10 words correctly on 2 occasions.

Group IV: S_4 copied 9 words correctly on 2 occasions.

Teaching:

Group I: S_4 achieved criterion after 3 teaching trials.

Group II: S_4 achieved criterion after 3 teaching trials.

Group III: S_4 achieved criterion after 3 teaching trials.

Group IV: S_4 achieved criterion after 3 teaching trials.

Phase III: Teaching Ss to, or verifying that Ss could, label words as they occurred in chart stories.

The objective of Phase III was to verify that Ss could, or teach Ss to, label words as they occurred in 10 stories. Initially, Ss were requested to label all the words in the 10 stories. It was determined that if Ss could label at least 95% of the words as they occurred in stories on 2 consecutive occasions, they would be considered sufficiently proficient to proceed to Phase IV. The performances of Ss are not graphically depicted but can be summarized as follows:

Baseline:

S_1 - On trial 1 S_1 correctly labeled 96.8% of the words as they occurred in the 10 stories. On trial 2 S_1 labeled 99.4% of the words correctly.

S_2 - On trial 1 S_2 correctly labeled 100% of the words as they occurred in 10 stories. On trial 2 S_2 labeled 99.4% of the words correctly.

S_3 - On trials 2 and 2 S_3 correctly labeled 97.5% of the vocabulary words as they occurred in the 10 stories.

S_4 - On trial 1 S_4 correctly labeled 98.1% of the vocabulary words as they occurred in 10 stories. On trial 2 S_4 labeled 99.4% of the words correctly.

Teaching:

Implementation of the Phase III teaching procedures was not necessary as all Ss performed at or above criterion levels during baseline trials.

Phase IV: Teaching Ss to, or verifying that Ss could, label words as they occurred in a list of printed questions.

The objective of Phase IV was to verify that Ss could, or to teach Ss to, label words as they occurred in questions. Initially, Ss were requested to label the words in 3 questions pertaining to 10 stories (30 questions in all). It was determined that if Ss could label at least 95% of the words as they occurred in questions on 2 consecutive occasions, they would be considered sufficiently proficient to proceed to Phase V. The performances of Ss are not graphically depicted but can be summarized as follows:

Baseline:

S_1 - On trials 1 and 2 S_1 correctly labeled 100% of the words as they occurred in the 30 questions.

S_2 - On trials 1 and 2 S_2 correctly labeled 98.4% of the words as they occurred in the 30 questions.

S_3 - On trial 1 S_3 correctly labeled 97.6% of the words as they occurred in the 30 questions. On trial 2 S_3 labeled 100% of the words correctly.

S_4 - On trials 1 and 2 S_4 correctly labeled 98.4% of the words as they occurred in the 30 questions.

Teaching:

Implementation of the Phase IV teaching procedures was not necessary as all Ss performed above criterion levels during baseline trials.

Phase V: Teaching Ss to label words as they occurred in stories; label words as they occurred in who, what and where questions pertaining to the stories; and write answers to the questions correctly.

The objective of Phase V was to teach Ss to read the stories and write answers to questions correctly. Criterion performance for reading a story was defined as 2 consecutive trials without an error. A trial consisted of Ss having the opportunity to label the words in a story, to label the words in 3 questions, and to write answers to the 3 questions. Phase V was considered completed when Ss could perform at criterion level on 3 consecutive stories without the need for teaching intervention.

S_1 - The performance of S_1 in Phase V is not graphically depicted but can be summarized as follows:

Baseline Measures: (Prior to instruction on Phases I, II, III & IV).

Story 1: S_1 did not print a correct answer in trial 1 and printed 2 out of a possible 3 correct answers in trial 2.

Story 2: S_1 did not print a correct answer in trial 1 or trial 2.

Story 3: S_1 did not print a correct answer in trial 1 and printed 1 correct answer in trial 2.

Story 4: S_1 did not print a correct answer in trials 1 and 2.

Story 5: S_1 did not print a correct answer in trial 1 and printed 1 correct answer in trial 2.

Story 6: S_1 did not print a correct answer in trials 1 and 2.

Story 7: S_1 did not print a correct answer in trial 1 and printed 1 correct answer in trial 2.

Story 8: S_1 did not print a correct answer in trials 1 and 2.

Story 9: S_1 did not print a correct answer in trial 1 and printed 1 correct answer in trial 2.

Story 10: S_1 did not print a correct answer in trials 1 and 2.

Baseline Measures: (After criterion levels had been reached in Phases I, II, III & IV).

Story 1: S_1 achieved criterion after trial 4. That is, S_1 did not require instruction on Story 1.

Story 2: S_1 printed 2 correct answers in trial 3 and 3 correct answers in trial 4.

Story 3: S_1 printed 2 correct answers in trial 3 and 3 correct answers in trial 4.

Story 4: S_1 achieved criterion after trial 4. That is, S_1 did not require instruction on Story 4.

Teaching:

Story 2: S_1 achieved criterion after trial 6. That is, S_1 did not require instruction on Story 2 except for consequation.

Story 3: S_1 achieved criterion after trial 6. That is, S_1 did not require instruction on Story 3 except for consequation.

S_2

Baseline Measures: Prior to instruction of Phases I, II, III & IV.

The performance of S_2 on Phase V is not graphically depicted but can be summarized as follows: S_2 made 0 correct responses to stories 1-10 on trials 1 & 2.

Baseline Measures: After criterion levels had been reached in Phases I, II, III & IV.

Story 1: S_2 printed 2 correct answers on trial 3 and printed 1 correct answer on trial 4.

Story 2: S_2 printed 2 correct answers on trial 3 and printed 3 correct responses on trial 4.

Story 3: S_2 achieved criterion after trials 3 & 4. That is, S_2 did not require instruction on Story 3.

Story 4: S_2 achieved criterion after trials 3 & 4. That is, S_2 did not require instruction of Story 4.

Teaching:

Story 1: S_2 achieved criterion after 3 teaching trials (5-6-7).

Story 2: S_2 achieved criterion after 2 trials 5 & 6. That is, S_2 did not require instruction on Story 2 except for consequation.

S_3

Baseline Measures: Prior to instruction on Phases I, II, III & IV.

The performance of S_3 in Phase V is not graphically depicted but can be summarized as follows:

Story 1: S_3 printed 0 correct answers on trial 1 and 1 correct answer on trial 2.

Story 2: S_3 printed 1 correct answer on trial 1 and printed 0 correct answers on trial 2.

Story 3: S_3 printed 0 correct answers on trials 1 & 2.

Story 4: S_3 printed 1 correct answer on trial 1 and printed 0 correct answers on trial 2.

Story 5: S_3 printed 0 correct answers on trials 1 & 2.

Story 6: S_3 printed 0 correct answers on trial 1 and printed 1 correct answer on trial 2.

Story 7: S_3 printed 1 correct answer on both trials 1 & 2.

Story 8: S_3 printed 1 correct answer on trial 1 and printed 0 correct answers on trial 2.

Story 9: S_3 printed 1 correct answer on both trials 1 & 2.

Story 10: S_3 printed 1 correct answer on both trials 1 & 2.

Baseline Measures: After criterion levels had been reached in Phases I, II, III & IV.

Story 1: S_3 printed 1 correct answer on both trials 3 & 4.

Story 2: S_3 printed 2 correct answers on trial 3 and printed 0 correct answers on trial 4.

Story 3: S_3 printed 0 correct answers on trial 3 and printed 1 correct answer on trial 4.

Story 4: S_3 printed 1 correct answer on trial 3 and printed 2 correct answers on trial 4.

Story 5: S_3 achieved criterion after trials 3 & 4. That is, S_3 did not require instruction on Story 5.

Story 6: S_3 achieved criterion after trials 3 & 4. That is, S_3 did not require instruction on Story 6.

Teaching:

Story 1: S_3 achieved criterion after 3 teaching trials (5-6-7).

Story 2: S_3 achieved criterion after 3 teaching trials (5-6-7).

Story 3: S_3 achieved criterion after 5 teaching trials (5-6-7-8-9).

Story 4: S_3 achieved criterion after trials 5 & 6. That is, S_3 did not require instruction on Story 4 except for consequation.

S_4

Baseline Measures: Prior to instruction on Phases I, II, III & IV.

The performance of S_4 in Phase V is not graphically depicted but can be summarized as follows:

Stories 1-6: S_4 printed 1 correct answer in each trial 1 & 2.

Story 7: S_4 printed 1 correct answer on trial 1 and printed 0 correct answers on trial 2.

Story 8: S_4 printed 2 correct answers on trial 1 and printed 0 correct answers on trial 2.

Story 9: S_4 printed 2 correct answers on trial 1 and printed 0 correct answers on trial 2.

Story 10: S_4 printed 1 correct answer on both trials 1 & 2.

Baseline Measures: After criterion levels had been reached in Phases I, II, III & IV.

Story 1: S_4 achieved criterion after trials 3 & 4. That is, S_4 did not require instruction on Story 1.

Story 2: S_4 achieved criterion after trials 3 & 4. That is, S_4 did not require instruction on Story 2.

Story 3: S_4 printed 2 answers correctly on both trials 3 & 4.

Teaching:

Story 3: S_4 achieved criterion after 2 trials 5 & 6. That is, S_4 did not require instruction on Story 3 except for consequation.

DISCUSSION

The results as presented strongly indicate that the major instructional objectives were realized. That is, the students acquired the ability to label ninety words; to label those words as they occurred in ten stories; to answer a "who," a "what" and a "where" question pertaining to selected stories and offered a reasonable degree of confidence that they would be able to read and answer questions pertaining to other stories composed from the same words without the direct assistance of a teacher.

The whole word approach has several distinct advantages when applied to teaching reading to severely handicapped students in that reading can be taught concurrent to the development of psycholinguistic skills; articulation requirements of whole word reading skills are less demanding than many phonetic tasks; many phonetic drills are not based on real life experiences and probably have little meaning to severely handicapped students; and it has been demonstrated that complex reading skills can be taught to severely handicapped students through whole word approaches.

On the other hand, the whole word approach has several inherent disadvantages in that it does not teach the students word attack skills. Thus, if students with only whole word reading skills do not know the label of a word they must secure the information from someone who does. In addition, when students leave a school program, they must have been taught all the words necessary to survive in the next environment or they will require continuous reading instruction on new words.

Obviously, a sight vocabulary of ninety words and the rudimentary story forms presented here do not represent the reading skills necessary for survival in community settings. However, there are several, at least logical extensions of this program that should be noted which might contribute to the realization of the longitudinal goal of teaching all students the reading skills necessary to survive in a community setting. For example, new words can be added to the list of ninety and the number of semantically and syntactically acceptable story combinations would be enhanced considerably. The stories could be embellished with adjective, personal pronouns, prepositional phrases, etc. The stories could be made more inferential. More sophisticated content attack skills could be developed. The students could be taught to answer "why" and "how" questions. They could be asked to answer questions immediately and after increasing delays without the stories present. They could be required to write information provided verbally and then asked about the information.

Finally, the reader should be made aware of several cautions and limitations. First, the initial pool of 90 words was probably too large in that an unusual amount of instructional time was required in order to guarantee that the students could label each of the ninety words. Perhaps a smaller initial word pool would have more efficiently served the objective. Second, the students possessed the language skills necessary to understand and verbally report answers to who, what and where questions both from verbal and printed cues prior to the instruction of this program. Others interested in implementing a modification of this program should probably verify the existence of at least these language skills. Finally, these students had demonstrated reading skills ranging from the first pre-primer through the first grade levels. Surely these prerequisites facilitated the realization of the program objectives.

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FIGURE A-1
The Performance of S_1 in Phase I

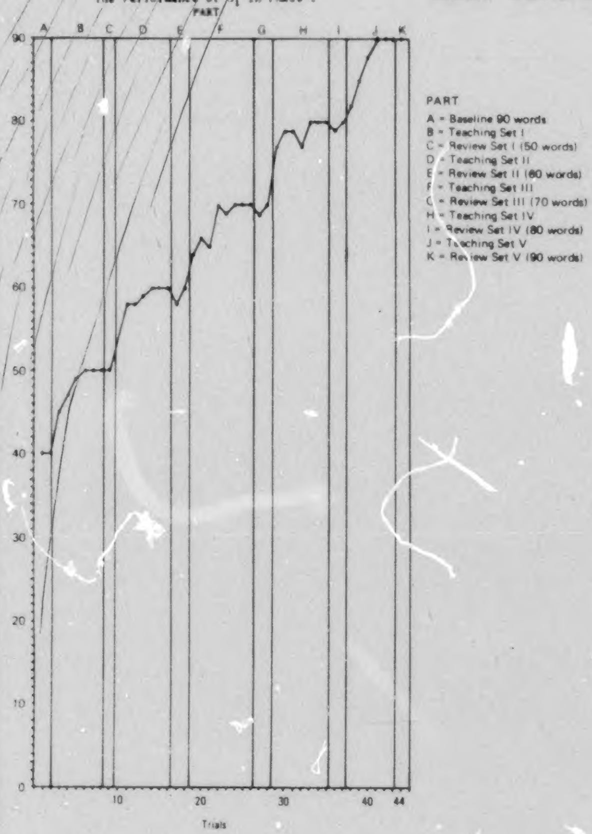


FIGURE A2
Performance of S_2 in Phase I

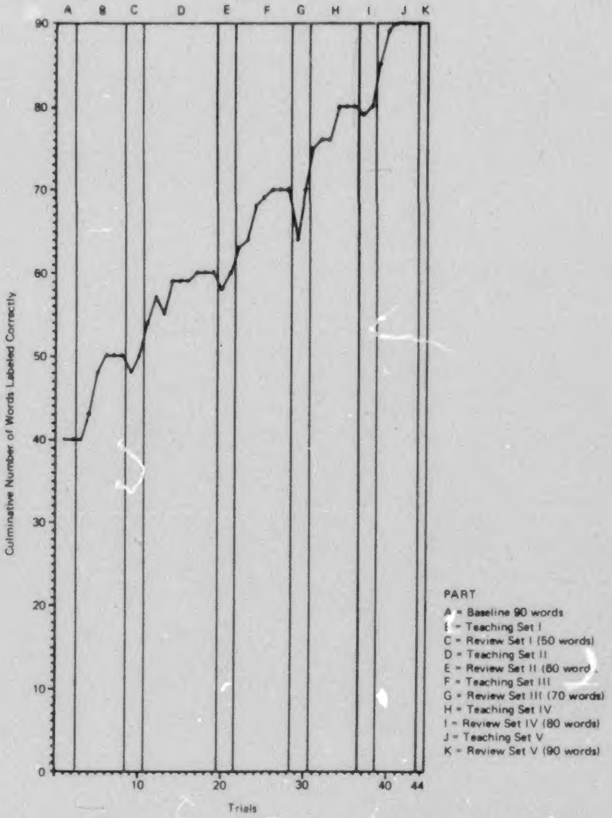


FIGURE A3
Performance of S_3 in Phase I

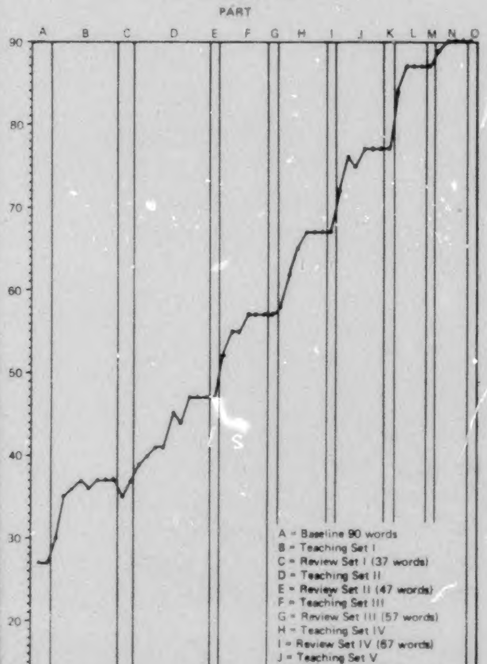
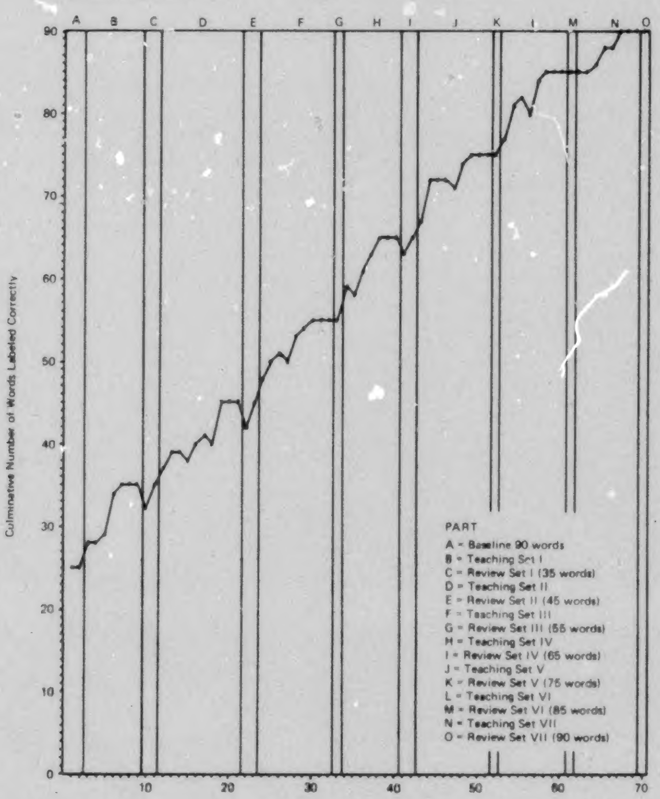


FIGURE A4
Performance of S_4 in Phase I



APPENDIX A-1

Phase I

Example Data Sheet

Vocabulary Labeling

Teaching Set: III

date	student	she	black	falls	hamburger	eat	stomach	what	did	going	will	total
	S1	+	+	+	+	-	+	+	+	+	+	9/10
	S1	+	+	+	+	-	-	+	+	+	+	8/10
	S1	+	+	+	+	+	+	+	+	+	+	10/10
	S1	+	+	+	+	+	+	+	+	+	+	10/10
	S1	+	+	+	+	+	+	+	+	+	+	10/10

date	student											total

date	student											total

APPENDIX A-2

Phase II

Example Data Sheet

Date: ____________

S: ____________

Total Correct: 10/10

Group: IV

bears

____

ache

____

stomach

____

doctor

____

Paul

____

home

____

kite

____

red

____

Jeff

____

zoo

____

APPENDIX A-3

Phase III

Example Data Sheet

story 1 date ____ trial baseline

Terry is a boy.
He is going to Scott's birthday party.
He is bringing Scott a red kite.

# incorrect 0
name S_1

---

story 2 date ____ trial baseline

Vicki wants candy.
Vicki goes to the store.
Vicki buys a chocolate candy bar.

# incorrect 0
name S_1

---

story 3 date ____ trial baseline

Jeff likes animals.
He is going to the zoo.
He will feed the big black bears.

# incorrect 0
name S_1

---

story 4 date ____ trial baseline

Scott falls down on the sidewalk.
He hurts his leg.
His mother takes him to the doctor's office.
# incorrect 1
name S_1

---

story 5 date ____ trial baseline

Terry is hot.
He wants to go to the lake.
He will swim in the lake.

# incorrect 0
name S_1

---

story 6 date ____ trial baseline

Kristin is hungry.
She goes to a restaurant.
She eats a big hamburger

# incorrect 0
name S_1

---

story 7 date ____ trial baseline

Jeff is lost.
He tells a policeman his name and address.
The policeman takes Jeff home.
# incorrect 1
name S_1

---

story 8 date ____ trial baseline

Bob is in the car.
He is going to the circus.
He will see a big tiger.

# incorrect 0
name S_1

---

story 9 date ____ trial baseline

John has some money.
He goes to the candy store.
He buys buttered popcorn

# incorrect 0
name S_1

---

story 10 date ____ trial baseline

Paul is sick.
Paul has a stomach ache.
Paul is going to the doctor.

# incorrect 0
name S_1

APPENDIX A-4

Phase IV

Example Data Sheet

story 1 date ____ trial baseline

1. Who is the boy?
2. Where is he going?
3. What will he bring?

# incorrect 0
name S_3

story 2 date ____ trial baseline

1. Who wants candy?
2. Where does Vicki go?
3. What does she buy?

# incorrect 0
name S_3

story 3 date ____ trial baseline

1. Who likes animals?
2. Where is he going?
3. What will he feed?

# incorrect 0
name S_3

story 4 date ____ trial baseline

1. Who falls down?
2. Where does he go?
3. What does he hurt?

# incorrect 1
name S_3

story 5 date ____ trial baseline

1. Who is hot?
2. Where does he want to go?
3. What will he do at the lake?

# incorrect 0
name S_3

story 6 date ____ trial baseline

1. Who is hungry?
2. Where did she go?
3. What did she eat?

# incorrect 0
name S_3

story 7 date ____ trial baseline

1. Who is lost?
2. Where does the policeman take Jeff?
3. What does Jeff tell the policeman?

# incorrect 1
name S_3

story 8 date ____ trial baseline

1. Who is in the car?
2. Where is he going?
3. What will he see?

# incorrect 0
name S_3

story 9 date ____ trial baseline

1. Who has money?
2. Where does he go?
3. What does he buy?

# incorrect 0
name S_3

story 10 date ____ trial baseline

1. Who is sick?
2. Where is Paul going?
3. What does Paul have?

# incorrect 0
name S_3

APPENDIX A-5

Phase V

Example Data Sheet

Read story - write answer to questions

name ______ story ______ trials ______ date ______

Who	+	+	+	+					
What	+	+	+	+					
Where	-	-	+	+					
Total	2	2	3	3					

name ______ story ______ trials ______ date ______

Who									
What									
Where									
Total									

name ______ story ______ trials ______ date ______

Who									
What									
Where									
Total									

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A RUDIMENTARY DEVELOPMENTAL MATH SKILL SEQUENCE FOR "SEVERELY HANDICAPPED" STUDENTS[1]

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I. Introduction

Educational objectives for severely-handicapped students should encompass skills which will facilitate their functioning independently in a community setting. Time-telling, money, counting, addition, subtraction, measuring and the use of a calendar are math skills that are vital components of independent community functioning. This paper will attempt to communicate the current thinking of several classroom teachers of severely handicapped students regarding the components of a math skill sequence from zero to rudimentary addition. The sequence should not be viewed as a recipe or a prescription, but rather as an illustration. We are proposing a math sequence with a sampling of activities that teachers may use to augment their daily planning. The sequence is in a continuous process of refinement and revision based upon the students' performance within it.

Many young severely handicapped students have extremely limited receptive and especially verbal expressive language repertoires. In our judgment, developmental math sequences which are not dependent upon verbal expressive language are in dire need of delineation, and this delineation must involve articulating task analyses of math skills that could be adapted to nonverbal and verbal students.

Task analysis essentially involves breaking tasks into component parts and sequencing the components from easy to hard (e.g., simple to complex). Through a task the student may learn concepts and operations. That is, in teaching a task the student may learn to discriminate one ball from non-balls or to discriminate balls (the concept balls) from non-balls. Operations are concepts which are general response classes or general procedures (e.g., touching, placing, labeling) the student may use to demonstrate knowledge of other concepts. For example, in the math sequence, one-to-one correspondence is taught as a concept which the student later uses as an operation to solve equality problems.

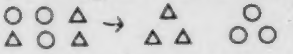
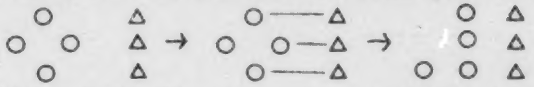
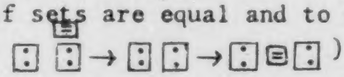
A student has to use an operation to demonstrate knowledge of it. Most task analyses require students to use verbal operations (e.g., labeling) and are therefore inappropriate for nonverbal students. Verbal operations are the most universally useful and in many cases the most efficient operations students can use. Thus, students should be taught and required to use verbal operations as early as possible. However, a student's inability to use verbal operations should not exclude him from learning skills. He/She could utilize nonverbal operations such as pointing and signing.

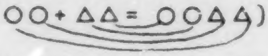
What is delineated here is a sequence of math skills up to rudimentary addition which may be adapted to either verbal or nonverbal students. Both nonverbal and verbal operations which the student can use to demonstrate knowledge of the tasks are delineated. Initially, nonverbal students are required to use nonverbal operations; when they learn verbal operations, they are required to use them.

Many components of the sequence delineated have been taught to severely handicapped students. However, no severely handicapped student has been taught the entire sequence of skills. Thus, although the efficacy of individual steps has been empirically verified, the entire sequence has not.

II. Rationale

The underlying rationale for the sequence evolved from the notion that there are basic concepts and operations which may be utilized in the solution of most math problems. In the sequence articulated here the underlying concepts encompass sets, counting and equality.

The first step in the sequence (See the Scope and Sequence Chart) involves teaching students to sort objects into sets, i.e., place objects that vary along at least one dimension into separate units of space (e.g., ). Next, students are taught to match the members of sets (one-to-one correspondence) (e.g., ).[2] When students demonstrate that they can use the operation of one-to-one correspondence to match sets on the basis of quantity, they are taught equality. That is, students are taught to utilize the operation of one-to-one correspondence to determine if sets are equal and to demarkate equal sets by an equals sign (e.g., ).

Subsequent to equality the students are taught addition. Addition as conceptualized in this program involves the student joining two sets of objects to form a new set (e.g., a set of balls and/plus a set of triangles is/equals a set of balls and triangles or ○○ + △△ = ○○△△). Addition also entails the student's using the operation of one-to-one correspondence and/or rational counting to determine if the sets on both sides of the equals sign contain the same quantity (e.g., ).

Concurrent to teaching the concepts of sets, one-to-one correspondence, equality and rudimentary addition, the concepts of one-many and more/less are taught.

Up to this point sequence delineates both nonverbal and verbal operations such that no verbal expressive language (e.g., rational counting) or numeral labeling skills are required of nonverbal students to demonstrate understanding of equality, addition and more/less problems. Verbal students with the skills of rational counting and numeral recognition are required to utilize rational counting operations to solve problems and to solve problems posed in terms of numerals as well as objects. Students who do not have the requisite skills of rational counting and numeral recognition (i.e., matching numerals to quantities and matching quantities to numerals) are taught these skills concurrently with the teaching of one-to-one correspondence, one-many, etc. Once mastered, the students are required to utilize these skills to solve equality, addition and more/less problems.

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[2] The lines indicate the student's performance of the one-to-one correspondence operation.

The major purpose of this report is to articulate a tentative but useable math skill sequence for severely handicapped students. These skills are outlined in the Scope and Sequence Chart and Behavioral Objectives section of the paper. After delineating the behavioral objectives, basic teaching procedures we have found to be relatively successful with severely handicapped students are articulated and their adaption to behavioral objectives illustrated. With the realization that it is not possible to adapt a rigidly defined curriculum across diverse classrooms and students, it was not our purpose to provide a fully articulated math program for severely handicapped individuals, but to articulate basic components, sequences, procedures and activities which may be adapted to specified students and classroom situations.

III. Scope and Sequence

Each program (e.g., sets, one-to-one correspondence) was composed of several objectives. The chart indicates that, for example, Objective 1 of one-to-one correspondence should not be taught until the student has mastered Objective 2 of sets. (See Scope and Sequence Chart on following page)

IV. Behavioral Objectives

Note: While specific materials are suggested for use with each objective, the student should demonstrate knowledge of the concept or ability to use an operation across a wide range of materials. Materials should be chosen on the basis of their functional use, accessability in the natural environment, ease of discrimination, and reinforcement value to the individual student. Across all skill areas (except "sets") only use materials that the student has demonstrated he can discriminate (such as in Objective 2 of the Sets program). For example, the student should be able to discriminate the objects he is to match in one-to-one correspondence before they are used in the one-to-one correspondence program. An "X" next to an objective indicates that it has not yet been taught. These objectives are logical extensions of the sequence but their efficacy for severely handicapped students needs verification.

Scope and Sequence Chart

	Objectives															
A. Prerequisites																
1. Motor Imitation	1															
2. Verbal Imitation		1	2													
B. Sets		1	2	3	4	5	6	7	8	9						
C. One-to-One Correspondence				1	2	3										
D. Equality					1	2	3	4								
E. One-Many				1	2	3										
F. More and Less																
1. More						1										
2. Less							1	2								
3. More/Less									1	2						
G. Counting																
1. Rational				1	2	3	4									
2. Rote							1	2	3							
3. Numeral Recognition							1									
4. Matching Numerals to Quantities								1								
5. Matching Quantities to Numerals								1								
6. Ordering Quantities									1							
7. Ordering Numerals										1	2					
H. Addition																
1. Objects							1	2	3							
2. Numerals and Objects										1						
3. Numerals and Lines											1					
4. Numerals												1				
5. Fingers													1	2	3	4
6. Facts											1	2	3	4	5	6

A. Prerequisites

1. Motor Imitation

Behavioral Objective 1: Given the cue, "Do this," and a selected motoric gesture, the student should imitate the gesture.

Subobjective: The student should imitate at least the following motoric gestures: a) touching an object; and b) moving or manipulating selected objects.

2. Verbal Imitation

Behavioral Objective 1: The student should be able to imitate (make gross approximations of) isolated sounds or whole words.

B. Sets

Behavioral Prerequisites: Motor imitation.

Behavioral Objective 1: Given a group of objects whose members differ along at least one dimension (e.g., red blocks and red bears) with one member of each set separated out to serve as a match cue, the student should sort the objects into separate sets when T points and says, "Make a set of (blocks) and a set of (bears), put the (blocks) here and the (bears) here.

Match △

Cues ○

△ ○ △
△ ○ ○
○ △

Group to be sorted

Instructional Sequence: The student should be able to sort into separate sets at least:

a. groups of objects of like color
b. groups of objects of different colors

Materials: Blocks, bears, etc.

Verbal Operation: The same procedure as in Objective 1 is followed. After the student correctly sorts the objects the teacher points and says, "This is a set of (blocks/bears). What is this set?" and the student should label the set (e.g., "blocks" or "bears").

Behavioral Objective 2: Given a group of objects whose members differ along at least one dimension, the student should sort the objects into separate sets when the teacher points and says, "Make a set of (blocks) and a set of (bears). Put the (blocks) here and the (bears) here."

Instructional Sequence: The student should be able to sort into separate sets:

a. objects
b. flannel items

Materials: Blocks, bears, etc. and flannel items.

Verbal Operation: The same procedure as in Objective 2 is followed. After the student correctly sorts the objects the teacher points and says, "What is this set?" and the student should label the set (e.g., "blocks" or "bears").

Behavioral Objective 3: Given three sets (e.g., Set 1, blocks; Set 2, bears; Set 3, pennies) of objects composed of from 1 to 5 members, and when the teacher touches one set of objects and says, "This is a set of (blocks/bears/pennies). Touch the set of (blocks/bears/pennies)," the student should touch the correct set.

Instructional Sequence: The student should touch the correct set when presented:

a. Two unlike sets with one object in each set
b. Three unlike sets with one object in each set
c. Three unlike sets with two like objects in each set
d. Three unlike sets with one or two like objects in each set
e. The sequence is continued until the student demonstrates that he/she can discriminate unlike sets containing from one to five like members.

Verbal Operation: When the teacher presents three sets of objects, points to one set and says, "This is a set of (blocks), what is this set?" the student should label the set.

Behavioral Objective 4: When the teacher places two, two member sets with like members in front of the student (e.g., Set 1, blocks; Set 2, pennies) and says, "Touch the set of (blocks)," the student should touch the correct set.

Verbal Operation: The same procedure is followed as in Objective 4. After the student touches the correct set the teacher points and says, "What is this set?" and the student should label the set (e.g., "blocks" or "cups").

Behavioral Objective 5: When the teacher places two, two member sets with unlike members in front of the student (e.g., Set 1, block and cup; Set 2, penny and pencil), holds up a set identical to one presented to the student (e.g., block and cup) and says, "Touch the set of (block and cup)," student should touch the correct set.

Verbal Operation: The same procedure is followed as in Objective 5. After the student touches the correct set the teacher says, "This is a set of (block and cup). What is this set?" and the student should label the set.

Behavioral Objective 6: When the teacher places three, two member sets with unlike members in front of the student (e.g., Set 1, block and cup; Set 2, penny and pencil; Set 3, bear and cup) and says, "Touch the set of (block and cup)," the student should touch the correct set.

Instructional Sequence: The student should touch sets with unlike members when presented with:

a. two, two member sets with unlike members
b. three, two member sets with unlike members

Verbal Operation: The same procedure is followed as in Objective 6 after the student touches the correct set the teacher says, "What is this set?" and the student should label each member of the set (e.g., "block and cup").

Behavioral Objective 7: Given a group of two to four unlike objects (e.g., block, penny, pencil, cup) and when the teacher models making a two member set (e.g., block, cup) and says, "This is a set of (block and cup). Make a set of (block and cup)," the student should make the correct set.

Verbal Operation: The same procedure is followed as in Objective 7. After the student makes the set the teacher points and says, "This is a set of (block and cup). What is this set?" and the student should label each member of the set (e.g., "block and cup").

Behavioral Objective 8: Given a group of four unlike objects (e.g., block, penny, pencil, cup) and when the teacher says, "Make a set of (block and cup), the student should make the correct set.

Instructional Sequence: The student should be able to make a two member set given:

a. a group of two unlike objects
b. a group of three unlike objects
c. a group of four unlike objects

Verbal Operation: The same procedure as in Objective 8 is followed. After the student makes the correct set, the teacher points and says, "What is this set?" and the student should label each member of the set.

Behavioral Objective 9: Given a group of objects (3 to 6) which can be made into three separate sets on the basis of color, size or shape and when the teacher says, "Sort the objects into sets by (color/size/shape), make sets of different (color/size/shape)" the student should sort the objects into sets along the dimension of color, size or shape.

Instructional Sequence: The student should be able to sort objects into sets when:

a. given three objects differing along at least one dimension
b. given six objects of like shape and size which can be sorted into three equal sets by color (cue - sort by color, make sets of different colors)
c. given six objects of like color and shape which can be sorted into three equal sets by size (cue - sort by size, make sets of different sizes)
d. given six objects of like color and size which can be sorted into three equal sets by shape (cue - sort by shape, make sets of different shapes)
e. given six objects all the same shape which may be sorted into three equal sets by color or size (cue - sort by [color/size], make sets of different [colors/sizes])
f. given six objects all the same color which may be sorted into three equal sets by shape or size (cue - sort by [shape/size], make sets of different [shapes/sizes])
g. given six objects which may be sorted into three equal sets by shape, size or color (cue - sort by [color/shape/size], make sets of different [colors/shapes/sizes])

Verbal Operation: The same procedure as stated in Objective 9 is followed. After the student correctly responds, the teacher asks, "How did you sort?" and the student should name the appropriate dimension (i.e., color, size, or shape).

C. One-to-One Correspondence

Behavioral Prerequisite: Motor imitation; B. Sets (Objective 2).

Behavioral Objective 1: The teacher places a set of objects (e.g., cups) on the table in a vertical array and places another set of objects (e.g., straws) less than or equal in number to the first set in front of the student. When the teacher says, "Give each (cup) one/a (straw)," the student should assign objects on a basis of one-to-one correspondence between sets. If there was one (straw) for each (cup) the teacher says, "There are enough." If there was not a (straw) for each (cup), the teacher says, "not enough," and waits for the student to ask or gesture for more (straws). When the student has given each (cup) a (straw), the teacher says, "There are enough."

Introductory Activity - Procedure: Students are seated around a table for "milk and cookie break" and a student is to give 1 cup or 1 napkin to each of the other 7 and put one in his own place.

a. The teacher hands 1 cup or 1 napkin to a student and says, "Give one/a cup to Ed," "Give one/a cup to Mary," etc. or "Give one/a napkin to Laura," etc.
b. The teacher gives 8 cups or 8 napkins to a student and says, "Give one/a cup to everyone" or "Give one/a napkin to everyone." (Correction procedure: If the student has "left overs" or gives "too many" to one student, the teacher says, "Look, does everyone have one/a cup and napkin?" or "Look, Ed does not have one/a cup or napkin," etc.)
c. The teacher gives a student more than 8 cups and 8 napkins and says, "Give one/a cup to everyone," or "Give one/a napkin to everyone."

Instructional Sequence: The student should be able to establish one-to-one correspondence between:

a. Sets of objects which have a functional relationship (e.g., cups and straws) when the sets are equal in number (enough).
b. Sets of objects which have a functional relationship when the student's set does not have enough objects. Throughout the remaining objectives the student having enough or not enough objects should be randomly varied.
c. Sets of flannel items or pictures which have a functional relationship (e.g., shirts and pants).
d. Like sets of objects (e.g., blocks and blocks).
e. Unlike sets of objects which have no functional relationship (e.g., blocks and bears).
f. Like sets of flannel items, or pictures (e.g., squares and squares).
g. Unlike sets of pictures or flannel items which have no functional relationship (e.g., shirts and chairs).

Materials: Cups, saucers, straws, napkins, pants, shirts, etc.

Verbal Operation: The teacher presents a set of objects, pictures or flannel items (e.g., cups) in a vertical array and presents another set of objects (e.g., straws) less than or equal to the first set to the student. When the teacher says, "Give each (cup) one/a (straw)," the student should assign objects (straws) on a basis of one-to-one correspondence between sets and when the teacher then asks, "Were there enough (straws) or not enough (straws)?" the student should say, "Enough," or "Not enough." If "not enough" was the correct response, the teacher gives the student more (straws) and when the student has given each (cup) a (straw), the T again asks, "Were there enough (straws) or not enough (straws)" the student should then say, "Enough."

Behavioral Objective 2: The teacher places one to ten flannel items in a selected array, gives the student a set of 1 to 10 flannel items, enough or not enough, to match each object in the teacher's set in a one-to-one correspondence and says, "Put a circle next to each pear" or "Give each tree one/a bird," etc. The student should match the objects in the sets in one-to-one correspondence. If there is one (circle) for each (pear), the teacher says, "There are enough (circles)." If there is not enough, the teacher says, "Not enough (circles)" and waits for the student to ask or gesture for more objects. When the student has matched the sets by one-to-one correspondence, the teacher says, "There are enough (circles)"

Instructional Sequence:[3] The student should be able to match sets according to quantity utilizing the operation of one-to-one correspondence when the sets are presented in:

a. Vertical arrays
b. Horizontal arrays
c. Domino configurations
d. Random arrays

Suggested Activity: The students should be taught to establish a one-to-one correspondence between sets presented on a chalkboard by drawing lines between their members.

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[3] The sequence described here is only suggested. It may be that "domino" configurations are not appropriate for one-to-one correspondence.

Materials: At least ten sets of one to ten flannel items and a flannel board.

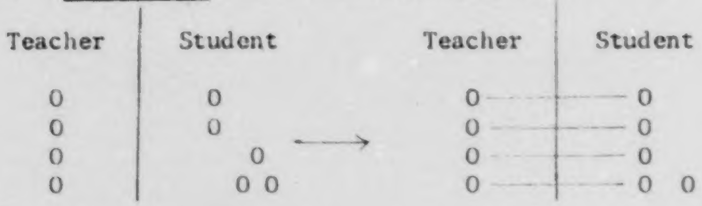
Verbal Operation: The same as described under Verbal Operation Objective 1.

Behavioral Objective 3: Given a worksheet with two sets of one to ten items the student should be able to connect the members of the sets in one-to-one correspondence by drawing lines.

D. Equality

Behavioral Prerequisites: E. One-Many; C. One-to-One Correspondence (Objective 1); and/or G. Counting (Rational, Objective 2).

Behavioral Objective 1: Given a sheet of paper divided into teacher's half and student's half and when the teacher places a selected number of items (from 2 to 10) on her half, fewer items on the student's half (but not zero) and says, "Make your side equal to my side," the student should utilize the operation of one-to-one correspondence to make the sides equal (i.e., the student should match the members of the sets in one-to-one correspondence until there are no unmatched members). The teacher may point to the student's side and say "Not enough" as an additional cue.

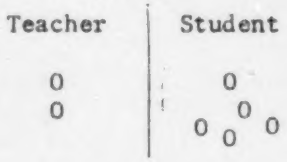


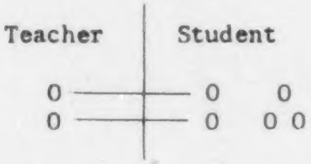
Instructional Sequence: The student should make equal sets of:

- a. functionally related objects when the teacher's set contains one object.
- b. functionally related objects when the teacher's set contains two objects.
- c. continue with functionally related objects in steps of one until the teacher's set contains up to ten objects.
- d. like objects when the teacher's set contains from one to ten objects.
- e. flannel items when the teacher's set contains from one to ten flannel items.

Verbal Operation: Students with verbal skills should be taught rational counting and be required to solve equality problems by counting the number of objects on the teacher's half, then counting out and placing the same number of objects on their half. When the teacher asks, "Are there *enough?*" or "Are the sets *equal?*", the students should check their answer by using the operation of one-to-one correspondence to insure that each member of the teacher's set is matched to a member of their set and then say, "enough" or "equal." Verbal students without rational counting skills would not be required to count but only to say "equal" or "enough" after matching the members of the sets in one-to-one correspondence.

Behavioral Objective 2: Given a sheet of paper divided into teacher's half and student's half, and when the teacher places a selected number of items (from 1 to 10) on her half and says, "Make your side *equal* to my side," the student should use the operation of one-to-one correspondence to make his/her half equal (i.e., the student should match members of his/her set with the teacher's until there are no unmatched members).





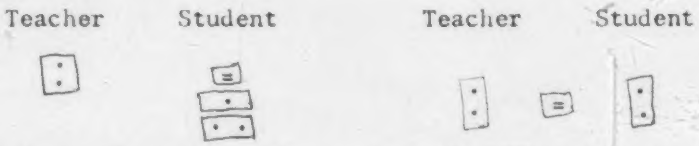
Instructional Sequence: The student should be able to make a set equal to the teacher's when:

a. The teacher's set has 1 object.
b. The teacher's set has 2 objects presented in a vertical array.
c. The teacher's set has 3 objects presented in a vertical array.
d. The teacher's set has 3 objects presented in a triangular array.
e. The teacher's set has 2 objects presented in a horizontal array.
f. The teacher's set has 3 objects presented in a horizontal array.
g. This sequence is extended until the student is able to equate sets of 1 to 10 objects or flannel items.

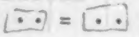
Materials: Paper, chips, blocks, flannel items, etc.

Verbal Operation: The same as delineated under Verbal Operation Objective 1.

Behavioral Objective 3: Given a sheet of paper divided into teacher's half and student's half, and when the teacher places a selected number of items (from 1 to 10) on her half and says, "Make your side equal to my side," the student should use the operation of one-to-one correspondence (See Objective 2) to make his half equal and then place an equals sign between the two sets.

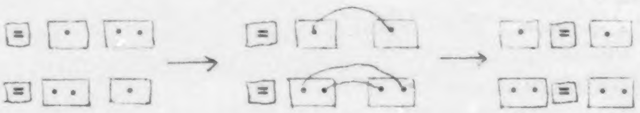


Instructional Sequence: The student should be able to make his half equal and place an equals sign when the items are arranged in:

a. Vertical arrays
b. Horizontal arrays
c. "Domino" configurations
d. Arrays on cards ().

Verbal Operation: The same procedure as described under Verbal Operation Objective 1.

Behavioral Objective 4: Given two pairs of equal sets in a selected array on cards and the cue, "Find sets which are equal," the student should find equal sets by using the operation of one-to-one correspondence (See Objective 2) and then put an equals sign between them.



Subobjectives: The student should be able to find equal sets by using the operation of one-to-one correspondence when set members are arranged in: a) vertical, domino or horizontal arrays; b) when there are from 1 to 5 sets.

Verbal Operation: The same as described under Verbal Operation Objective 1.

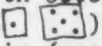
E. One-Many

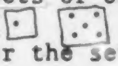
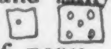
Behavioral Prerequisite: Motor imitation; B. Sets (Objective 2).

Behavioral Objective 1: Presented with sets of one and many like objects on 9 x 11" cards ( ), the student should touch the set of one or the set of many when the teacher models the correct response (holds up a card identical to the correct choice) and says, "Touch one" or "Touch many."

Instructional Sequence: The student should be able to touch one or many when given a model and presented sets of:

- a. objects grouped in sets of 1 and 4.
- b. objects grouped in sets of 1 and 3.
- c. 2-dimensional representations of one or many objects.

Verbal Operation: Presented with sets of one and many like objects on 9 x 11" cards (), and when the teacher points and says, "This is (one/many). Is this one or many?" the student should say, "One" or "Many."

Behavioral Objective 2: Presented with sets of one and many like or unlike objects on 9 x 11" cards ( or ), the student should touch the set of one or the set of many when given the cue: "Touch one" or "Touch many."

Instructional Sequence: The student should be able to touch one or many when presented sets of:

- a. objects grouped in sets of 1 and 4.
- b. objects grouped in sets of 1 and 3.
- c. 2-dimensional representations of one or many objects.

Verbal Operation: Presented with sets of one and many like or unlike objects on 9 x 11" cards, and asked, "Is this one or many" the student should say, "One" or "Many."

Behavioral Objective 3: Given a set of 6 objects and asked, "Give me one" or "Give me many," the student should hand the teacher one or many objects.

Instructional Sequence: The student should be able to make a group of one or many objects when given:

- a. a set of 6 like objects
- b. a set of 6 unlike objects

Verbal Operation: The same procedure described in Objective 3 is followed. After the student gives the teacher one or many objects the teacher asks, "Is this one or many?" and the student should say, "One" or "Many."

F. More and Less

1. More

Behavioral Prerequisites: E. One-Many (Objective 2); B. Sets (Objective 2); C. One-to-One Correspondence (Objective 1); and/or G. Counting (1. Rational, Objective 2).

Behavioral Objective 1: Given 2 sets unequal in quantity with their members arranged vertically and the cue, "Touch more," the student should use the operation of one-to-one correspondence to choose the set with more (i.e., the student should match the objects in the sets in one-to-one correspondence and point to the set with at least one object left unmatched).

Instructional Sequence: The student should touch "more":

a. given sets of 1 and 10 objects
b. given sets of 3 and 10 objects
c. given sets of 2 and 7 objects
d. given sets of 3 and 5 objects
e. given sets of 2 and 3 objects
f. given sets of 5 and 6 objects
g. given sets of 3 and 10 2-D representations
h. given sets of 3 and 5 2-D representations
i. given sets of 5 and 6 2-D representations

Verbal Operation: Students with verbal skills should be taught rational counting and be required to solve the "More" problems by counting the objects in each set and saying the number in it. The teacher then points to each set and says, "Which is more, (number) or (number)?" and the student should say, "(number) is more." Then when the teacher says, "How can you tell?" and the student should match the objects in the sets in one-to-one correspondence, point to the set with at least one object left unmatched and say, "More." Students who are verbal but do not rationally count would follow the procedure articulated in Objective 1, then point to the set with more and say, "More."

2. Less

Behavioral Prerequisite: More.

Behavioral Objective 1: Given 2 sets unequal in quantity with their members arranged vertically and the cue, "Touch not more," the student should use the operation of one-to-one correspondence (as described in "More") to touch the set with "not more."

Subobjective: The student should be able to touch the set with "not more" when presented sets: a) varying in number from 1 to 10; b) varying in spacial dimension (See the instructional sequence for "More").

Verbal Operation: Same as for "More" except the student must touch the set with not more and say, "Not more."

Behavioral Objective 2: Given 2 sets unequal in quantity with their members arranged vertically and the cue, "Touch less," the student should use the operation of one-to-one correspondence (as described in "More") to choose the set with "Less."

Subobjective: The student should be able to touch the set with less when presented sets: a) varying in number from 1 to 10; b) varying in spacial dimension (See the instructional sequence for the "More").

Verbal Operation: Same as for "More" except the student must choose the set with less and say, "Less."

3. More/Less

Behavioral Prerequisites: F. More and Less (1. More); F. More and Less (2. Less).

Behavioral Objective 1: Given 2 sets of varying quantities with their members arranged vertically and the cue, "Touch (more/less)," the student should use the operation of one-to-one correspondence (as described in "More") to choose the set with more or less.

Instructional Sequence: The student should touch the set with more or less when presented with sets: a) varying in number from 1 to 10; b) varying in spacial dimension (See the instructional sequence for the "More").

Verbal Operation: Same as "More" except the student must touch the set with more or less and say, "More" or "Less."

Behavioral Objective 2: Given 2 sets of varying quantities with the members arranged in a selected configuration and the cue, "Touch (more/less)" the student should use the operation of one-to-one correspondence (as articulated in "more") to choose the set with more or less.

Instructional Sequence: The student should touch the set with more or less when presented with sets in:

a. Vertical arrays
b. Horizontal arrays
c. Random arrays

Verbal Operation: Same as described in More/Less, Objective 1.

G. Counting: Counting requires the students to make a verbal approximation of each number. Nonverbal students could be taught to make a gesture or sign to represent each number.

1. Rational

Behavioral Prerequisite: Verbal imitation; B. Sets (Objective 2).

Behavioral Objective 1: Presented a set of one to five objects arranged in horizontal or vertical arrays and asked, "How many (objects)?" the student should count the objects assigning a number (at least make a sound) to each object as he/she touches or moves it.

Instructional Sequence: The student should count the objects when presented:

a. a set of 1 to 3 objects in a horizontal array
b. a set of 3 to 5 objects in a horizontal array
c. a set of 1 to 5 objects in a horizontal array
d. a set of 1 to 5 objects in a vertical array

Behavioral Objective 2: Presented a set of one to five objects in a random array and asked to count out a number less than the number in the array, the student should count out the correct number. (If this is too difficult for the student he/she should be taught to arrange the objects in a horizontal or vertical array before counting.)

Instructional Sequence: The student should be able to count out the correct number of objects when:

a. asked to count out a number of objects equal to that presented
b. asked to count out a number of objects less than that presented.

Note: Throughout this objective the student was permitted to put the objects out in a vertical or horizontal array. In the objectives that follow the teacher may choose to put the objects out only in the array the student used in this objective.

Behavioral Objective 3: Presented with one to five objects in one horizontal or vertical array of five, or six to ten objects in two horizontal or vertical arrays of five and asked, "How many" or "Count the (objects)" the student should count the objects.

Instructional Sequence: The student should count the objects when presented:

a. a set of 6 to 8 objects in two horizontal arrays of five
b. a set of 8 to 10 objects in two horizontal arrays of five
c. a set of 6 to 10 objects in two horizontal arrays of five
d. a set of 6 to 10 objects in two vertical arrays of five
e. a set of 1 to 10 objects in one or two horizontal or vertical arrays of five

Behavioral Objective 4: Presented a random array of one to ten objects and asked to count out a number less than the array presented the student must count out the appropriate number of objects. (If this is too difficult for the student, he/she should be taught to arrange the objects in horizontal or vertical arrays before counting.)

Materials: Blocks, bears, chips, pennies, flannel items, etc.

2. Rote

Behavioral Prerequisite: G. Counting (1. Rational, Objective 3).

Behavioral Objective 1: When the teacher says, "Count to (number)," (from one to five) the student should count to the number.

Instructional Sequence: The student should count to a number when asked to count to:
a. 2
b. 3
c. 4
d. 5

Behavioral Objective 2: When the teacher says, "Count from one to a (number)," and then asks, "What are you going to count from?" and "What are you going to count to?" the student should correctly answer the questions and then count.

Instructional Sequence: The student should count from one to a number when directed to count to:
a. 3
b. 4
c. 5
d. 6
e. 7
f. 8
g. 9
h. 10

Behavioral Objective 3: When the teacher says, "Count from (number) to (number)," and asks, "What are you going to count from?" and "What are you going to count to?" the student should correctly answer the questions and then count.

Instructional Sequence: The student should count from a number to a number when directed to count:
a. from 2 to 5
b. from 3 to 6
c. from 1 to 8
d. from 4 to 9
Vary the combinations from 1 to 10.

3. Numeral Recognition

Behavioral Prerequisite: G. Counting (1. Rational, Objective 3).

Behavioral Objective 1: Given a cue to touch a numeral from 1 to 10 when the numerals are presented in random arrays the student should touch the correct numeral.

Instructional Sequence: The student should be able to touch the correct numeral or math symbol when asked to touch numerals (math symbols) from:
a. 1 to 3 presented on a number line
b. 1 to 6 presented on a number line
c. 1 to 10 presented on a number line
d. "+" or "="[4]
e. 1 to 3 presented in random order
f. 4 to 6 presented in random order
g. 7 to 10 presented in random order
h. 1 to 10 presented in random order

Verbal Operation: Presented with a numeral from 1 to 10 and the cue, "What (numeral) is this," the student should label the numeral.

Instructional Sequence: The student should be able to label numerals and math symbols when asked to label numerals from:
a. 1 to 3 presented on a number line
b. 1 to 6 presented on a number line
c. 1 to 10 presented on a number line
d. "+" and "="
e. 1 to 3 presented in a random array
f. 1 to 6 presented in a random array
g. 7 to 10 presented in a random array
h. 1 to 10 presented in a random array

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[4] The students should be taught to discriminate and label "+" as "plus" and "and" and "=" as "equal" and "is."

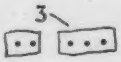
4. Matching Numerals to Quantities

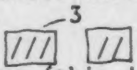
Behavioral Prerequisites: G. Counting (1. Rational, Objective 3); G. Counting (3. Numeral Recognition).

Behavioral Objective 1: Presented with a numeral from 1 to 10, a set of objects and the cue, "Count out this many," the student should count out the appropriate number of objects.

Instructional Sequence: The student should be able to count out the correct quantity given:
- a. one numeral from 1 to 3
- b. one numeral from 4 to 6
- c. one numeral from 7 to 10
- d. one numeral from 1 to 10

Subobjectives: The student should be able to match numerals to quantities in a worksheet format and match numerals to lines and figures.

Instructional Sequence:
- a. match numerals to quantities in worksheet format 

- b. match numerals to lines 

- c. match numerals to fingers (this is a prerequisite to addition with fingers)

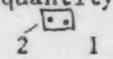
5. Matching Quantities to Numerals

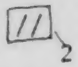
Behavioral Prerequisites: G. Counting (1. Rational, Objective 3); G. Counting (3. Numeral Recognition).

Behavioral Objective 1: Given a set of objects from 1 to 10, a number line and the response cue, "Find the numeral which shows this many," the student should count the objects and then touch the appropriate numeral on the number line.

Instructional Sequence: The student should be able to match a quantity to a numeral given:
- a. one quantity from 1 to 3
- b. one quantity from 4 to 6
- c. one quantity from 7 to 10
- d. one quantity from 1 to 10

Subobjective: The student should be able to match quantities to numerals in a worksheet format and match lines and fingers to numerals.

Instructional Sequence:
- a. match a quantity to a numeral in a worksheet format 

b. match a quantity line to a numeral 1  2
c. match a quantity to an equal quantity of fingers (this is a prerequisite to addition with fingers)

6. Ordering Quantities

Behavioral Prerequisites: F. More and less; G. Counting (1. Rational, Objective 2); G. Counting (2. Rote, Objective 2).

Behavioral Objective 1: Presented with from one to five sets of unequal quantities (quantities varying from one to five) and asked to, "Order the sets of (objects) or (2-D representations)," the student should count the number of objects in each set and place the set with more objects (the number which comes after in counting) to the right of the set with less (the number which comes before in counting). The student should then check this ranking by matching the objects in the sets using the one-to-one correspondence operation to insure that a set with at least one left over was placed to the right of the matched set.

Instructional Sequence: The student should be able to order sets when given:

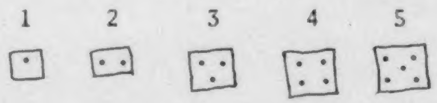
a. two sets varying in quantity from 1 to 2
b. three sets varying in quantity from 1 to 3
c. four sets varying in quantity from 1 to 4
d. five sets varying in quantity from 1 to 5

Materials: 5 sets of lines or objects (quantities 1 to 5) on note cards.

7. Ordering Numerals

Behavioral Prerequisites: G. Counting (3. Numeral Recognition, Objective 1 - nonverbal); G. Counting (4. Matching Numerals to Quantity, Objective 1); G. Counting (5. Matching Quantities to Numerals, Objective 1); G. Counting (Ordering Quantities).

Behavioral Objective 1: Given from 1 to 5 sets of unequal quantities (quantities vary from 1 to 5) paired with numerals and the cue, "Order the numerals" the student should order the numerals from least to most by counting the number of objects in each set and placing the set with more objects (the numeral which comes after in counting) to the right of the set with less (the number which comes before in counting) and check the order by utilizing the operation of one-to-one correspondence. (See Objective 1, Ordering Quantities)



Materials: 5 sets of lines or objects (quantities 1 to 5) on note cards.

Behavioral Objective 2: Given numerals from one to five in a random array and the cue, "Order the numerals," the student will order the numerals from left to right and then check the order by drawing lines under the numerals and utilizing the operation of one-to-one correspondence (See Objective 1, Ordering Quantities) to insure that a set with at least one unmatched member was placed to the right of the matched set.

H. Addition: The addition objectives articulated here require the students to use the operation of rational counting in solving the problems. As described in the rational counting objectives, this operation requires the students to make a verbal approximation of each number as he/she touches the objects being counted. Nonverbal students could be taught to solve addition problems through using the one-to-one correspondence operation[5] or by making a gesture to represent each number.

1. Addition With Objects

Behavioral Prerequisites: B. Sets (Objective 5); D. Equality (Objective 2); F. More and Less; and G. Counting (1. Rational, Objective 3).

Behavioral Objective 1: Given three sets of objects (e.g., cups, blocks, bears) and when the teacher points and says, "This is a set of (cups) and this is a set of (blocks), (plus/join) the sets," the student should join the sets. Then the teacher says, "Now you have a set of (cups) and (blocks). Point to the set of (cups and blocks)," the student should point to the set of (cups and blocks).

Instructional Sequence: The student should join sets of:
   a. real boys and girls with the student being a member of one set
   b. objects

Verbal Operation: Same as described in Objective 1. After the student joins the sets the teacher says, "Now you have a set of (cups) and (blocks)," "What is this set?" and the student should say, "A set of (cups) and (blocks)."

Behavioral Objective 2: Given three sets of objects (e.g., blocks, cups, bears) and when the teacher points and says,

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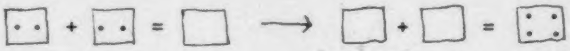
[5] Given two factors, an equals sign (OO + O = ___) and the cue, "Make the sets equal," the student should use the operation of one-to-one correspondence to make the sides equal (OO + O = OOO) (i.e., the S should match the objects on each side of the equals sign in one-to-one correspondence until one object on each side corresponds with an object on the other side).

"This is a set of (cups) and this is a set of (blocks). How many (cups) are there?" the student should count the objects and state the correct number. Then when teacher says, "How many (blocks) are there?" the student should count the objects and state the correct number. Next, the teacher says, "(plus/join) the sets" and after the student joins the sets says, "Now you have a set of (cups) and (blocks). Point to the set of (cups) and (blocks)." After the student points to the set of (cups) and (blocks) the teacher says, "How many (cups) and (blocks) are there?" and the student should count the (cups) and (blocks) and state the number.

Behavioral Objective 3: Presented with two factor boxes containing a selected number of items (1-10) and when the teacher points and says, "This is a set of (blocks) and this is a set of (bears). How many (blocks) are there?" the student should count the (blocks) and state the number. Then when the teacher points and asks, "How many (bears) are there?" the student should count the (bears) and state the number. The teacher then says, "Join/plus the sets and tell how many." The student should move the objects from the factor boxes to the sums box, count the number of objects in the sums box and say the number.



2. Numerals and Objects

Behavioral Prerequisites: G. Counting (3. Numeral Recognition, Objective 1 - verbal); G. Counting (4. Matching Numerals to Quantity, Objective 1); G. Counting (Matching Quantities to Numerals, Objective 1); G. Counting (1. Rational, Objective 3); H. Addition (1. Addition With Objects, Objective 3).

Behavioral Objective 1: Presented with two factor boxes containing a selected number of objects (1-10), a number line from 1-10 with removable numerals, and the cue, "Find the numeral that shows how many," the student should count the number of objects in each factor box and place the correct numeral under it, move the objects from the factor boxes to the sums box, count the objects in the sums box and place the correct numeral under it. The student should then point to each numeral and math symbol and say, "(2) (balls) (and/plus) (2) (triangles) (is/equals) four (balls) and (triangles)." or "(2) (and/plus) (2) (is/equals (four)."[6]

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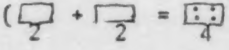
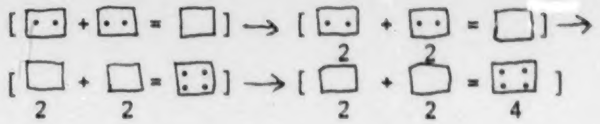
[6] Care should be taken in teaching this objective to guard against the student learning a misconception of equality. That is, two empty boxes equals a sum's box with objects in it. ().



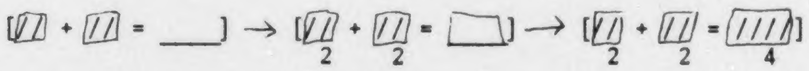
Instructional Sequence: The student should add sums up to 5 and say:

a. "(Number) (objects) and (number) (objects) is (number) (objects)."
b. "(Number) (objects) plus (number) (objects) is (number) (objects) and (objects)."
c. "(Number) (objects) plus (number) (objects) equals (number) (objects) and (objects)."

3. Numerals and Lines

Behavioral Prerequisites: H. Addition (2. Numerals and Objects); motoric ability to draw lines.

Behavioral Objective 1: Presented with two factor boxes containing a selected number of lines (1-10), a number line from 1-10 with removeable numerals and the response cue, "Find the number that shows how many," the student should count the number of lines in each factor box and put the correct numeral under it, count the number of lines in both factor boxes and draw the number of lines counted to in the sum's box. The student should then put the correct numeral under the sum's box and point to each numeral and symbol and say, "(2) and/plus (2) is/equals (4)."



Self-Correction Procedure: At this point the student should be taught a procedure for checking his/her answer. After the student has completed Objective 1 the teacher points to each side of the equals sign and says, "Are the sides equal?" And when the student says, "Yes/no," the teacher asks, "How can you tell?" and the student should count the lines on each side of the equals sign and say, "(4) equals (4)." (The student could also match the objects or lines on each side of the equals sign in one-to-one correspondence to show that the sides are equal.)

4. Numerals

Behavioral Prerequisites: H. Addition (3. Numerals and Lines).

Behavioral Objective 1: Given an equation of the form 2 + 2 = $\square$, a number line with removeable numerals and the cue, "Find the number which shows how many," the student should draw the appropriate number of lines under each of the factor boxes, count all the lines and state the number, draw the number of lines stated under the sum's box and put the appropriate numeral (from the number line) in it. Then when the teacher asks, "What does (2) plus (2) equal?" the student should say, "(2) plus (2) equals (4)."

$$[2 + 2 = \underline{\quad\quad}] \rightarrow [\underset{//}{2} + \underset{//}{2} = \underline{\quad\quad}] \rightarrow [\underset{//}{2} + \underset{//}{2} = \underset{////}{\underline{\quad\quad}}] \rightarrow$$

$$[\underset{//}{2} + \underset{//}{2} = \underset{////}{4}].$$

Self-Correction Procedure: Same as described in Addition with Numerals and Lines.

5. *Fingers*

Behavioral Prerequisites: H. Addition (1. Addition with Numerals); G. Counting (2. Rote, Objective 3).

Behavioral Objective 1: Given an equation of the form 2 + 3 = $\square$ when the teacher asks the student, "Which side do you start counting on?" the student should touch the side without the empty box (i.e., the side to the left of equals sign). When the teacher asks, "What do you count to?" the student should count on his finger(s) to the number in the second factor box (e.g., 3) and then while holding up those finger(s) and starting with the number in the first factor box (e.g., 2) the student should count his/her fingers (e.g., 3 - 4 - 5), say the number counted to and place it in the sums box. Then when the teacher asks, "What does (two) plus (three) equal (___)?" the student should say, "(two) plus (three) equals (five)."

$$[2 \,|\, + 3 = \square\,] \longrightarrow [2 + 3 = \boxed{5}\,]$$

Correction Procedure: After the student completes Objective 1 when the teacher says, "How can you tell," the student should draw lines under each numeral and use the correction procedure described in "Addition with Numerals and Lines."

Behavioral Objective 2: The student should be able to perform the behaviors listed in Objective 1 without teacher cues.

Behavioral Objective 3: Given an equation of the form $\square + 2 = 5$ or $2 + \square = 5$ and when the teacher asks the student the following:

a. "Which side do you start counting on?" the student should touch the side without any empty box.
b. "What do you count to?" the student should point to the numeral on the side of the equation without an empty box and label it (e.g., 5).
c. "What number do you start counting from?" the student should point to the numeral on the side of the equals sign with an empty box and label it (e.g., 2).
d. "(2) plus how many equals (5)?" the student should start counting with the numeral on the side of the equals sign with an empty box (e.g., 2) and count on his/her fingers up to the numeral on the side of the equals without an empty box (e.g., 5) holding up each finger as he/she counts. Then the student should count the fingers he/she is holding up, say the number counted to (e.g., 3) and place this numeral in the sum's box.
e. "(2) plus how many equals (5)?" the student should say "(2) plus (3) equals (5)."

Instructional Sequence: The student should add with his fingers given problems of the form:

a. $2 + \square = 5$
b. $\square + 3 = 5$

Self-Correction: After the student completes Objective 3 when the teacher asks, "How can you tell?" the student should draw lines under each numeral and use the correction procedure described in "Addition with Numerals and Lines."

XBehavioral Objective 4: Given an equation of the form $\square + 2 = 5$ or $2 + \square = 5$ the student should be able to perform the behaviors listed in Steps a through e (Behavioral Objective 3) correctly and in sequence without any teacher cues.

Self-Correction: After the student completes Objective 4 when the teacher asks, "How can you tell?" the student should draw lines under each numeral and then use the correction procedure described in "Addition with Numerals and Lines."

X6. Facts[7]

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[7] These objectives should be taught through group and individual drills. There should be an emphasis on rate. Thus, races are recommended.

Behavioral Prerequisites: H. Addition (4. Numerals and Objects); G. Counting (2. Rote, Objective 3).

Behavioral Objective 1: When orally presented problems of the form zero plus one, one plus one, two plus one ... up to nine plus one, the student should state the answer for each problem.

Instructional Sequence: The student should be able to state the answer when given the problems:
  a. in sequence, i.e., one plus one, two plus one, etc.
  b. in random order

Behavioral Objective 2: When presented orally in sequence with problems of the form: $5 + 0 = 5$, $5 + 1 = 6$, $5 + 2 = \_\_$, $5 + 3 = \_\_$, etc. the student should be able to state the answer for each problem.

Instructional Sequence:
  a. Problems presented visually (on the blackboard) and orally

$$\begin{aligned} 5 + 0 &= 5 \\ 5 + 1 &= 6 \\ 5 + 2 &= \_\_ \\ 5 + 3 &= \_\_ \end{aligned}$$

  b. Problems presented just orally.

Behavioral Objective 3: When orally presented with a problem where the first factor is more than the second factor (e.g., $5 + 2 = \square$), the student should derive the answer by going through a series of problems starting with $\underline{X} + 0 = \underline{X}$. (e.g., $5 + 0 = 5$, $5 + 1 = 6$, $5 + 2 = 7$).

Instructional Sequence:
  a. Problems presented visually (on the blackboard) and orally

$$5 + 2 = \square \rightarrow \begin{aligned} 5 + 0 &= 5 \\ 5 + 1 &= 6 \\ 5 + 2 &= 7 \end{aligned}$$

  b. Problems presented just orally.

Behavioral Objective 4: When orally presented with number pair problems such as one plus one, two plus two ... up to ten plus ten, the student should state the answer.

Behavioral Objective 5: When orally presented with a problem where the first factor is less than the second factor, (e.g., $4 + 6 = \square$) the student should derive the answer by using an addition sequence starting with the number pair of the first factor

$$4 + 6 = \square \rightarrow \begin{aligned} 4 + 4 &= 8 \\ 4 + 5 &= 9 \\ 4 + 6 &= 10 \end{aligned}$$

Instructional Sequence:

a. Problems presented visually (on the blackboard) and orally of the form:

0	and the teacher points and says, "What	0
1	does four plus six equal?" "What number	1
2	should we start counting with?" the	2
3	student should find the number pair	3
4	of the first factor and say 4 + 4 and	4+4=8
5	go through the sequence from 4 + 4 =	4+5=9
4+6=	8 to 4 + 6 = 10 as the teacher writes	4+6=10
	it out.	

b. Problems presented visually (on the blackboard) and orally of the form:

4+6=	and the teacher asks, "What does four	4+4=8
	plus six equal?" the student should	4+5=9
	go through the sequence starting with	4+6=10
	the number pair of the first factor	
	as the teacher writes the sequence on	
	the board.	

c. Problems presented just orally.

Behavioral Objective 6: When orally presented addition problems with sums up to 10, the student should state the answer.

V. Procedures

The same basic teaching and behavioral measurement procedures are utilized across behavioral objectives. The teaching and measurement procedures are incorporated into test-teach-test designs. That is, the teacher presents a cue; if the student responds correctly, he is rewarded; if he responds incorrectly, he is taught the correct response through either a modeling procedure (the teacher models the response and requires the student to imitate it) or a priming procedure (the teacher physically guides the student through the correct response). For students who initially error, the modeling cues and prompts are faded until the correct response occurs in response to verbal cues (models are faded by gradually modeling less of the correct response - prompts are faded by gradually withdrawing physical support until the student performs the response without teacher assistance).

A. Mastery Criterion

Mastery criterion is the criterion the student has to attain in order to demonstrate that he has mastered a specified math objective and is ready to advance to the next step of the sequence. In this program criterion levels are set in terms of trials. That is, when teaching numeral recognition one could teach the numerals in sets of one, two, three, etc. dependent upon the abilities of the student, and the responses a student makes to a complete set is considered a trial: e.g., for a set of one, one response equals a trial, etc. The mastery criterion set throughout is three consecutive correct trials. A sample data sheet should further clarify what is meant by a trial.

Sample Data Sheet*

Date ________ Behavior Objective Num. Rec. Set 1, 2, 3

Name	Trial	Num. 1	Num. 2	Num. 3	Tot. Correct
Student #1	1	+	+	M	2
	2	+	+	+	3
	3	+	M	+	2
	4	+	+	+	3 **
	5	+	+	+	3 **
	6	+	+	+	3 **

* In the data system utilized: + = a correct response, M = a correct response after a model, and P = a correct response after a prime.

** Criterion met three consecutive correct trials.

B. Basic Teaching and Measurement Procedure

1. Secure the attention of the student(s).

2. Present materials.

3. Present a cue to respond and cue the student to scan the instructional materials. Prime the scanning response if necessary.

4. Evaluate student's response.
   a. Correct response: immediately consequate the student's response with verbal praise (e.g., the teacher says, "Good," and says why it's good - "Good, there are enough" or "Good, they are the same") a smile and if necessary a consumable. The data sheet should be marked with a "+." If the student performs correctly in three consecutive trials, proceed to the next step in the math sequence.
   b. Incorrect response: say "No," and tell why it's wrong (e.g., "No, not enough" or "No, not the same"), then go to Step five.

5. Secure eye contact, present the cue to respond and provide a model of the correct response.

6. Secure eye contact and present a cue to respond.

7. Evaluate student's response.
   a. Correct response: immediately consequate the student's response with verbal praise (e.g., the teacher says, "Good," and says why it's good - "Good, there are *enough*" or "Good, they are the *same*") and a smile. The data sheet should be marked with an "M."
   b. Incorrect response: say "No" and tells why it's wrong (e.g., "No, *not enough*" or "No, *not the same*"), then proceed to Step eight.

8. Secure eye contact, present cue to respond and prime the correct response by physically guiding the student through it. Consequate the response with verbal praise and say why it's right (e.g., "Good, there are *enough*"), smile and mark the data sheet with a "P." Eliminate the priming by gradually fading the assistance.

9. Follow the procedures until the student performs correctly in three consecutive trials.

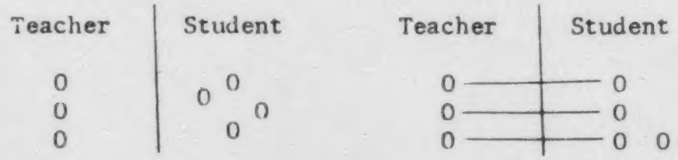
C. Adapting the Teaching Method to Behavioral Objectives

The basic procedures presented above were adapted to each behavioral objective. An illustration of an adaption to a selected objective is described below.

1. Adaptation to an Equality Objective:

Behavioral Objective 2 - Instructional Sequence Step 3:

Given a sheet of paper divided into teacher's half and student's half and when the teacher places three objects on her half and says, "Make your side *equal* to my side," the student should use the operation of one-to-one correspondence to make his/her half equal. (i.e., the student should match members of his set with members of the teacher's until there are no unmatched members).

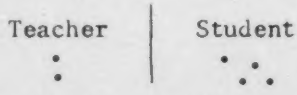


Materials: Paper, chips, blocks, flannel items.

Adaptation of Teaching Method:

1. The teacher says, "Look" and secures eye contact to the task for all the students.

2. The teacher puts a set of items on his/her half of the paper in a vertical array.



3. The teacher selects one student and says, "Joe, look at this," while he/she points to the materials and says, "Make your side equal to my side." If Joe looks at the materials, the teacher goes on to Step four. If not, he/she primes Joe to look and then goes on to Step four.

4. The teacher evaluates the student's response.
    a. Correct response: If the student utilizes the operation of one-to-one correspondence to put the same number of objects on his half of the sheet, he is immediately consequated with verbal praise (e.g., "Good, there are enough" or "equal"), a smile and if necessary a consumable. The data sheet is marked with a "+." If the student has three consecutive correct trials, he goes on to the next step in the math sequence.
    b. Incorrect response: If the student does not utilize the operation of one-to-one correspondence and/or puts out the wrong number of items the teacher says, "No, not equal," "too many" or "not enough" and goes to Step five.

5. The teacher secures eye contact, presents the response cue again (See Step Three) and models the correct response (including the one-to-one correspondence operation).

6. The teacher secures eye contact and presents the response cue (See Step Three).

7. The teacher evaluates the student's response.
    a. Correct response: If the student utilizes the operation of one-to-one correspondence to place the same number of objects on his half of the sheet, he is immediately consequated with verbal praise (e.g., "Good, there are enough" or "equal") and a smile and the teacher marks an "M" on the data sheet.
    b. Incorrect response: If the student does not utilize the operation of one-to-one correspondence and/or puts out the wrong number of items the teacher says, "No, not equal," "too many" or "not enough" and goes to Step eight.

8. The teacher secures eye contact, presents the response cue and primes the correct response by physically guiding the student through it. The teacher consequates a correct response with verbal praise (e.g., "Good, there are enough" or "equal") and a smile and marks the data sheet with a "P."

9. Follow these procedures until the student performs correctly in three consecutive trials.

Verbal Operation:

Students with verbal skills should be taught rational counting and be required to solve equality problems by counting the number of objects on the teacher's half, then counting out and placing the same number of objects on their half. The teacher then says, "Are there enough?" or "Are the sets equal?" and the students should check their answer by using the operation of one-to-one correspondence to insure that each member of the teacher's set is matched in one-to-one correspondence to each member of their set and say, "Enough" or "Equal."

Adaptation of Teaching Method:

1. The teacher says, "Look" and secures eye contact to the task for all the students.

2. The teacher puts a set of items on his/her half of the paper in a vertical array.

3. The teacher selects a student and says, "Tim, look at this," while he/she points to the materials and says, "Make your side equal to my side." If Tim looks, the teacher goes on to Step four. If not, the teacher primes Tim to look and then goes to Step four.

4. The teacher evaluates the student's response.
    a. Correct response: If the student counts the number of objects on the teacher's half, counts out the same number of his/her half and checks the answer by matching the objects in the teacher's set with the objects in his/her set by the one-to-one correspondence operation and says, "Equal," he/she immediately is consequated with verbal praise (e.g., "Good, there are enough" or "Equal"), a smile and if necessary a consumable. The data sheet is marked with a "+." If the student has three consecutive correct trials, he goes on to the next step in the math sequence.

   b. Incorrect response: If the student does not count the number of objects on the teacher's half and/or does not count out the same number on his/her half and/or does not check the answer using the operation of one-to-one correspondence and/or derives the wrong answer, the teacher says, "No," at the point of error and says, "Too many," "Not enough," or "Not equal," and goes on to Step five.

5. The teacher secures eye contact, presents the response cue again (See Step Three) and models the correct response.

6. The teacher secures eye contact and presents the response cue, "Make your side equal to my side."

7. The teacher evaluates the student's response.
   a. Correct response: Same as 5a except the teacher scores an "M."
   b. Incorrect response: Same as 5b except the teacher says, "No," at point of error and goes on to Step eight.

8. The teacher secures eye contact, presents the response cue, "Make your side equal to my side," and primes the correct response by physically guiding the student through it. The teacher consequates the correct response with verbal praise (e.g., "Good, there are enough" or "Equal") and a smile. The data sheet is marked with a "P."

9. Follow these procedures until the student performs correctly in three consecutive trials.

Sample Data Sheet

Date ________ Behavior Objective Equality 2-3 Array Vertical

Name	Trial	Act. 1	Act. 2	Act. 3	Tot. Correct
Student #1	1	+	M	+	2
	2	+	P	M	1
	3	+	M	+	2
	4	+	+	+	3
	5	+	+	+	3
	6	+	+	+	3

D. Placing the Student

Utilization of task analyses facilitates individualization of instruction. Within the task analysis model, each student's mastery of various objectives can be assessed before instruction and they may only be instructed on objectives on which they failed and for which they have mastered the prerequisites. Students can be permitted to proceed through the curriculum at their own pace, taking longer on trouble spots and skipping steps on which they demonstrate mastery. The determination of a student's entering level into the curriculum and mastery of behavioral objectives is assessed through administering baseline measures composed of a sampling of items from selected behavioral objectives.

One baseline measure (test) is given for each selected behavioral objective and basically consists of implementing steps one through four of the basic teaching procedure (i.e., without consequating student responses). For example, the baseline measure for the equality behavior objective was as follows:

1. The teacher says, "Look" and secures eye contact with the materials.

2. The teacher puts a set of items on her half of the paper in one of the specified arrays.

3. The teacher selects one student and says, "S, look at this," while she points to the materials and says, "Make your side equal to my side." If S looks, the teacher goes on to Step four. If S does not look, the teacher physically primes S to look and then goes on to Step four.

4. The teacher marks a "+" for a correct response and a "-" for an error response.

A similar test is devised for each selected behavioral objective. If the student fails the test and has the requisite behaviors, he is taught the skill. If he passes, he moves on to the next step in the sequence. The tests are given in the same easy to hard sequence as depicted in the task sequence.

Obviously, it would be inefficient to test the students on every behavioral objective of the math skill sequence before beginning instruction. Typically, students are only tested on skills for which they have demonstrated the requisite behaviors. For instance, a student who did not demonstrate mastery of either rational counting or one-to-one correspondence operations would not be tested on an addition objective. Similarly, students are not initially tested on every objective of a math skill. They are initially tested on the highest numbered objectives and only if they fail these objectives are they tested on lower numbered objectives. For example, in testing knowledge of "sets" the student would initially be tested on objective nine and only if he/she failed objective nine would he/she be tested on objective 8, 7, 6, 5, etc.

In evaluating the student's entry level, a checklist or grid may be devised which will reflect baseline test results. Below is a grid and several possible testing outcomes are depicted.

Student: Mike

	Tests		
Skills	1	2	3
Imitation			
Motor	-	-	-
Verbal	-	-	-
Isolated sounds			
Whole words	-	-	-
Sets	-	-	-
One-to-One Correspondence			
Equals			
One-Many			
More/Less			
More			
Less			
More/Less			
Counting			
Rational			
Rote			
Numeral Recognition			
Matching Numerals to Quantities			
Matching Quantities to Numerals			
Ordering			
Addition			
Objects			
Numerals and Objects			
Numerals and Lines			
Numerals			
Fingers			
Facts			

+ = meets criterion

- = does not meet criterion

Comments:

This evaluation indicates that the student does not have the requisite imitation skills to be included in the math program. When he meets criterion in the motor imitation program, he can begin the math program.

Student: Larry

Skills	Tests 1	2	3
Imitation			
Motor	+	+	+
Verbal			
Isolated sounds	-	+	-
Whole words	-	+	-
Sets	-	-	-
One-to-One Correspondence	-	-	-
Equals			
One-Many			
More/Less			
More			
Less			
More/Less			
Counting			
Rational			
Rote			
Numeral Recognition			
Matching Numerals to Quantities			
Matching Quantities to Numerals			
Ordering			
Addition			
Objects			
Numerals and Objects			
Numerals and Lines			
Numerals			
Fingers			
Facts			

+ = meets criterion

- = does not meet criterion

Comments:

This evaluation indicates that the student has the prerequisite motor imitation skills to enter the program at the level of sets. Verbal operations would be emphasized after the student has mastered the sound imitation criteria.

Student: Mary

	Tests		
Skills	1	2	3
Imitation			
Motor	+	+	+
Verbal			
Isolated sounds	+	+	+
Whole words	-	-	-
Sets	+	+	+
One-to-One Correspondence	-	-	-
Equals	-	-	-
One-Many			
More/Less			
More			
Less			
More/Less			
Counting			
Rational			
Rote			
Numeral Recognition			
Matching Numerals to Quantities			
Matching Quantities to Numerals			
Ordering			
Addition			
Objects			
Numerals and Objects			
Numerals and Lines			
Numerals			
Fingers			
Facts			

+ = meets criterion

- = does not meet criterion

← She made approximations.

Comments:

This evaluation indicates that the student has met the imitation criteria for motor and verbal behaviors. Verbal operations would be given emphasis in this student's program.

E. Generalization

The ultimate success of an educational program lies in the degree to which it facilitates maintenance and generalization of selected skills across environments. Typically, instructional programs hope for generalization but neither systematically program for it or measure it. For example, in an attempt to facilitate maintenance and generalization a program may suggest that the teacher create generalization situations and take advantage of every opportunity to require the student to use a skill across environments. However, if the success of a program is to be assessed in terms of maintenance and generalization of selected skills, the student's maintaining and generalizing the use of selected should be dealt with by more than suggestions. For each major skill taught in a program (e.g., sets, rational counting, addition) a generalization objective should be stated and the ultimate success of the program should be based upon the students' demonstrated mastery of the generalization objective. A student's failure to master a generalization objective would indicate a need for more instruction and/or a revision of objectives and program content such that they would more readily facilitate generalization. For example, the generalization objective for rational counting might be: Given the response cue, "How many (objects)?" count out (number) (objects)," or "Give me (number) (objects)," by at least three different control figures (e.g., teacher, mother, peer) across at least three situations (e.g., classroom, playground, workshop) the student should count out the correct number of objects.

Instructional Sequence: The student should be able to count out the correct number of objects when:

1. in the classroom and the student's teacher gives the cue to respond
2. on the playground and the student's teacher gives the cue to respond
3. in the classroom and on the playground when a teacher (not the student's) gives the cue to respond
4. in the classroom, on the playground and at home when the student's teacher, another teacher, or the student's mother gives the cue to respond.

Note: The situations, control figures and sequence should be adapted to the characteristics of specific students' schools, homes, etc.

VI. Discussion

The utilization of task analyses and skill sequences facilitates classroom research. It allows the teacher to obtain data on the order in which objectives were learned and on which objectives were difficult or easy to master. This information can be used to revise task analyses and skill sequences (e.g., slice instructional sequences into smaller steps and reorder the steps in a sequence, change response cues or response requirements). An empirically based (student data based) sequence should be in a constant state of revision in accordance with the dictates of the student's performance. The math sequence may be considered a potential sequence in the process of continual refinement and revision.

TEACHING A FINGER MANIPULATIVE METHOD FOR SOLVING TWO DIGIT NUMBER ADDITION PROBLEMS WITHOUT CARRYING TO SEVERELY HANDICAPPED STUDENTS[1]

By

Shirley Krsinich

Madison Public Schools and University of Wisconsin

Now that it has been demonstrated empirically that severely handicapped students are capable of acquiring a variety of functional academic skills (Brown, Bellamy, Sontag, 1971; Brown, Sontag, 1972; Brown, Scheuerman, Cartwright, York, 1973; Brown, Williams, Crowner, 1974) special educators must now confront questions related to what academic skills to teach, how to teach them, and in what sequence they should be taught.

One area of academic functioning which contains imperative prerequisites for reasonably independent functioning in a public community living situation is mathematics skills. The adding and subtracting required in purchasing interactions, counting large quantities in domestic and vocational settings, and telling time and functioning from time clocks are but a few of the mathematics skill clusters necessary for solving practical problems of varying complexity.

Previous empirically verified math skill programs for severely handicapped students have emphasized the counting of objects and reporting the amount (Brown, Scheuerman, Cartwright, York, 1973); counting money (Bellamy and Laffin, 1972); solving simple word problems (Brown, Shores, Gadberry, 1971); and solving horizontal forms of basic addition and subtraction problems by using the manipulative method of counting lines (Brown, Bellamy, Gadberry, and Sontag, 1971; Bellamy and Brown, 1971; Bellamy, Greiner and Buttars, 1974).

The math program presented here is an attempt to extend the sequence of math skills referred to above to solving two digit number addition problems without carrying while concomitantly teaching the use of a finger manipulative method.

The rationale for teaching a finger manipulation method as opposed to a manipulation method requiring the counting of lines is based on the following:

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[1] This paper was supported in part by Grant No. OEG-0-73-6137 to the University of Wisconsin-Madison from the Department of HEW, Bureau of Education for the Handicapped, Division of Training Programs, Washington, D.C.

1. The drawing of lines by the student is more time consuming and requires a substantial amount of additional paper as numerical values increase.

2. The correct solution of a problem is contingent upon the precise drawing of lines by the student. That is, fingers are more discrete entities when compared with the usually less than precise pencil markings of young severely handicapped students.

3. The line counting method employs a two dimensional representation of the addition concept by enabling the student to count from a number through a number by counting lines. The finger method utilizes a three dimensional representation of the addition concept by enabling the student to count from a number through a number by counting concrete objects. It is generally accepted that progressing from 3 to 2 dimensional objects is a tenable instructional sequence (House and Zeaman, 1963; Stevenson, 1972).

Instructional Prerequisites

The students who were to receive instruction in this program were not mathematically naive when the program was initiated. Before formal instruction in this program began, they were either taught or requested to verify mastery of at least the following prerequisite math skills.

1. Audible responses: It was required that each student demonstrate the ability to articulate:
   a. "Count up" for the addition sign (+);
   b. "Equals" for the horizontal equality sign (=), and the bar equality sign "____."

2. Rote counting: It was required that each student demonstrate the ability to rote count aloud in sequence from 1 through 40.

3. Numeral recognition: It was required that each student demonstrate the ability to label each of the printed numerals from 1 through 40 when those numbers were randomly presented.

4. Numeral writing: It was required that each student demonstrate the ability to print the numerals from 1 through 40 in response to randomly presented cues.

5. Making a fist and counting out an amount using fingers: It was required that each student demonstrate the ability to make a fist(s) and count out from 0 through 9 fingers in response to randomly presented number cues.

6. Making a fist and counting from a number to a number using fingers: It was required that each student demonstrate the ability to count from a number less than 9 to a number not more than 9 using fingers.

7. Solving a horizontal form of a basic addition fact: It was required that each student demonstrate the ability to solve a basic addition fact presented in a horizontal form. The responses the subject performed to demonstrate the ability to solve the problem were as follows:
   a. The student read the unsolved problem aloud.
   b. The student labeled the "count up" sign and the second numeral.
   c. The student placed his/her fist on the table and counted out the amount of fingers designated by the second numeral by outstretching one finger at a time while he/she labeled each finger with a number beginning with one. (For a problem in which the second numeral was 0, the student made a fist and responded by saying "No fingers.").
   d. The student read the first numeral of the problem, read the "count up" sign and counted on his outstretched fingers beginning with the number that followed the first numeral of the problem while raising and lowering each finger. (For a problem in which the second numeral was 0, the student read the first numeral, read the count up sign, stated that the zero amount was "No fingers" and said "Equals (the first numeral of the problem.)"
   e. The student wrote the last number verbalized in Step d to the right of the horizontal equality sign.
   f. The student read the problem and the solution aloud.

8. Solving a vertical form of a basic addition fact: It was required that each student demonstrate the ability to solve a basic addition fact presented in a vertical form. The responses the student performed to demonstrate the ability to solve the problem were the same as prerequisite 7 above with the exception that the student wrote the answer beneath the bar equality sign of the problem (See Response e).

9. Reading the basic components of a two digit number addition problem - Reading the basic components of the ones' column: It was required that each student demonstrate the ability to:
   a. systematically label the basic components of a two digit number plus a two digit number addition problem without carrying (e.g., $\begin{array}{r}12\\ \underline{+16}\end{array}$), and a two digit number plus a one digit number addition problem without carrying (e.g., $\begin{array}{r}11\\ \underline{+\ 7}\end{array}$);
   b. systematically label the basic components of the ones' column of the problems described.

10. Reading the basic components of the tens' side of a two digit number addition problem: It was required that each student demonstrate the ability to systematically label the basic components of the tens' column of the following problems:
    a. two digit number plus two digit number addition problems without carrying;
    b. two digit number plus one digit number addition problems without carrying.

11. Delineating place value of a number-tens and ones: It was required that each student demonstrate the ability to clearly delineate the place value of any number ranging from 0 through 40 by stating the digit that refers to the amount of tens and the digit that refers to the amount of ones. This skill was demonstrated by the following eight responses:
    a. The students counted quantities of single sticks as ones.
    b. The students counted and labeled the total number of ones in a bundle of ten ones.
    c. The students labeled the amount of bundles and reported the total number of ones in those bundles.
    d. The students labeled amounts of bundles and counted the bundles by tens.
    e. The students counted out quantities using bundles of tens and individual sticks (ones).
    f. The students counted a specific quantity, wrote the amount of that quantity, and labeled the number of tens' and ones' in that quantity.
    g. Given a numeral from 1 through 40, students labeled the numeral, labeled the digit that referred to the number of tens and labeled the digit that referred to the number of ones.[2]

Task Analysis

After each student verified mastery of the prerequisite skills, formal instruction began. The program consisted of four phases (I-IV) which were defined by the specific properties of problems within each phase.

Phase I: Teaching students to solve two digit number plus two digit number addition problems without carrying (e.g., $\begin{array}{r}12\\ \underline{+12}\end{array}$) in which the second digit in the ones' column was selected from the 0 to 5 range inclusively, by using a seriated problem solving procedure.

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[2] The reader interested in a more detailed presentation of the prerequisite steps referred to above is encouraged to contact: Shirley Krsinich, University of Wisconsin, Department of Studies in Behavioral Disabilities, 2605 Marsh Lane, Madison, Wisconsin, 53706.

Phase II: Teaching students to solve two digit number plus two digit number addition problems without carrying (e.g., $\begin{array}{r} 11 \\ +17 \\ \hline \end{array}$) in which the second digit in the ones' column was selected from the 6 to 9 range inclusively, by using a seriated problem solving procedure.

Phase III: Teaching students to solve two digit number plus one digit number addition problems without carrying (e.g., $\begin{array}{r} 10 \\ +\ 2 \\ \hline \end{array}$) in which the second digit in the ones' column was selected from the 0 to 5 range inclusively, by using a seriated problem solving procedure.

Phase IV: Teaching students to solve two digit number plus one digit number addition problems without carrying (e.g., $\begin{array}{r} 11 \\ +\ 8 \\ \hline \end{array}$) in which the second digit in the ones' column was selected from the 6 to 9 range inclusively, by using a seriated problem solving procedure.

Seriated Problem Solving Procedure

The students were to solve the problems of Phases I-IV using the seriated problem solving procedure outlined below. When provided with a problem card and the verbal cue, "Read and work the problem using your fingers," students will perform the following series of responses.

1. Students will read the unsolved problem aloud.

2. Students will read the ones' column of the problem aloud.

3. Students will label the "count up" (addition) sign and the second numeral in the ones' column.

4. Students will place their fists on the table and count out the amount of fingers designated by the second numeral in the ones' column by outstretching one finger at a time while labeling each finger with a number beginning with one. (For a problem in which the second numeral in the ones' column is 0, students will make a fist and will respond by saying "No fingers.")

5. Students will read the first numeral in the ones' column, read the "count up" sign, and will count their outstretched fingers beginning with the number that follows the first numeral in the ones' column while raising and lowering each finger. (For a problem in which the second numeral in the ones' column is 0, students will read the first numeral, read the count up sign, state that the zero amount is "No fingers" and will say "Equals (the first numeral in the ones' column.").

6. Students will write the number verbalized in response 5 beneath the bar equality sign under the ones' column.

7. Students will read the tens' column of the problem aloud. (For a two digit number plus a two digit number addition problem, students will read the problem as "One ten count up one ten equals;" for a two digit number plus a one digit number addition problem, students will read the problem as "One ten count up nothing equals.")

8. Students will label the "count up" sign and the second numeral in the tens' column.

9. Students will place their fists on the table and count out the amount of fingers designated by the second numeral in the tens' column by outstretching one finger at a time while labeling each finger with a number beginning with one. (For a two digit number plus a one digit number addition problem which does not have a second numeral in the tens' column, students will make a fist and will respond by saying "No fingers.")

10. Students will read the first numeral in the tens' column, read the "count up" sign and will count their outstretched fingers beginning with the number that follows the first numeral in the tens' column while raising and lowering each finger. (For a two digit number plus a one digit number addition problem which does not have a second numeral in the tens' column, students will read the first numeral, read the "count up" sign, state that the null amount is "No fingers" and will say "Equals (the first numeral in the tens' column.").

11. Students will write the number verbalized in response 10 beneath the bar equality sign under the tens' column.

12. Students will read the problem and the solution aloud.

METHOD

Students (Ss)

The 4 Ss ($\underline{S}_1$, $\underline{S}_2$, $\underline{S}_3$ and $\underline{S}_4$) ranged in chronological age from 11 years and 10 months to 14 years and 6 months ($\bar{X}$ = 12 years and 11 months) in I.Q. scores from 43 to 47 ($\bar{X}$ = 45) and in years in public school from 5 to 7 years ($\bar{X}$ = 5.5 years). Ss also received such medical diagnoses as "Down's Syndrome," "heart condition - controlled," "vision difficulty," "moderately to severely retarded," "operations: skin graft on hands," "has an eating problem which is psychologically and emotionally based." Ss were enrolled in the Madison Public Schools in a self-contained classroom within a school for severely handicapped students.

$\underline{S}_1$ was an 11 year and 10 month old Down's Syndrome boy who obtained an I.Q. score of 47 on the Stanford Binet Test of Intelligence and was reported to be "functioning in the upper level of the trainable range." According to school records in his cumulative folder he was described as "eager, attentive, helpful and patient ... sometimes stubborn." ... "If he is not interested in a task he is inclined to be disruptive." ... "needs a lot of fine motor development, especially strengthening fingers." During his school years, $\underline{S}_1$ has also had a history of eating only soft foods, (i.e., baby food, mashed potatoes, etc.). Prior to public school placement he attended a Day Care Center for young handicapped children.

$\underline{S}_2$ was a Down's Syndrome boy of 13 years and 2 months who obtained an I.Q. score of 43 on the Stanford Binet Test of Intelligence and was described as "functioning in the moderately retarded range in intelligence, adaptive behavior and motor skills." According to records in his cumulative folder, $\underline{S}_2$ was reported to have "severe speech problems that greatly hamper communication ... frustration due to other's inability to understand him" ... "enthusiastic and tries very hard" ... "likes a lot of teacher attention." $\underline{S}_2$ was also described in his medical records as having "vision difficulty" and subsequently wears glasses at all times.

$\underline{S}_3$ was a 12 year old boy who obtained an I.Q. score of 45 on the Stanford Binet Test of Intelligence and was described as "functioning in the upper level of the trainable range." School records contain the medical description "Down's Syndrome," "heart condition - controlled; no medication, yearly evaluation by cardiologist." According to records in his cumulative folder he was reported to be "socially adept; works for attention" ... "If someone acts out in a group, he is likely to follow the behavior" ... "has poor finger control and dexterity." Prior to public school placement he attended a Day Care Center for young handicapped children.

$\underline{S}_4$ was a boy of 14 years and 6 months who obtained an I.Q. score of 44 on the Weschler Intelligence Scale for Children and was described as "functioning in the moderate to severely retarded range with specific weaknesses in arithmetic and vocabulary skills." $\underline{S}$'s school records contain the medical description "Down's Syndrome," "3 operations: skin graft on hands." According to records in his cumulative folder he was described as "pleasant" ... "helpful" ... "cooperative student" ... "behaviorally functioning well except for very infrequent temper outbursts" ... "he is a good model for the others in his group."

Materials and Arrangement

The problems in Phases I and II consisted of numbers which were selected from the following numerical range:

a. The top numbers were selected from the 10-19 range, inclusively.
b. The bottom numbers were selected from the 10-19 range, inclusively when the combination of the top and bottom numbers did not require a carrying procedure.

Phase I:

Materials

1. Phase I required the use of 8 addition problems which were divided into 2 sets of 4 problems each (Set I-T and Set I-G). Set I-T consisted of 4 Teaching Problems (T1, T2, T3, T4); Set I-G consisted of 4 correlated Generalization Problems (G1, G2, G3, G4). The following are the Teaching Problems of Set I-T and the correlated Generalization Problems of Set I-G:

Set I-T:			Set I-G:	
T1	13* +11	*first digit in ones' column was selected from 1-5 range, inclusively	G1	12* +13
T2	16* +13	*first digit in ones' column was selected from 6-9 range, inclusively	G2	18* +11
T3	17* +10	*first digit in ones' column was selected from 6-9 range, inclusively	G3	19* +10
T4	10* +12	*first digit in ones' column was 0	G4	10* +14

The correlation between problems T1 and G1 is based on the following:
a. The first digits in the ones' column were selected from the 1-5 range, inclusively.
b. The second digits of the ones' columns were selected from the 1-5 range, inclusively. Selection from this range guaranteed that the problem could be solved using only one hand of fingers.

The correlation between problems T2 and G2 is based on the following:
a. The first digits in the ones' columns were selected from the 6-9 range, inclusively.
b. The second digits of the ones' columns were selected from the 1-5 range, inclusively. Selection from this range guaranteed that the problem could be solved using only one hand of fingers.

The correlation between problems T3 and G3 is based on the following:
a. The first digits in the ones' columns were selected from the 6-9 range, inclusively.
b. The second digits in the ones' columns were 0.

The correlation between problems T4 and G4 is based on the following:

   a. The first digits in the ones' columns were 0.
   b. The second digits of the ones' columns were selected from the 1-5 range, inclusively. Selection from this range guaranteed that the problem could be solved using only one hand of fingers.

   All Teaching Problems in Set 1-T and all Generalization Problems in Set 1-G were printed vertically, mimeographed and cut into individual problem cards which measured approximately 3 1/2" x 2 1/2." The numerals on each problem card were 3/4" in height. Each problem card had the set number and individual problem number written in the upper left hand corner.

2. Each S was provided a pencil and an eraser.

3. The consequences dispensed for correctly completing a problem without assistance were as follows:
   a. Verbal praise (e.g., "Fantastic working," "Great job.")
   b. The teacher (T) shook hand of S.
   c. During instruction two tokens were issued immediately upon correct completion of a problem in Sets 1-T and 1-G. One token was also issued to S_2 who was not receiving direct instruction but who was sitting quietly or attending to T or the working S. At the completion of a teaching session, S exchanged 5 tokens for 1 penny. Remaining tokens were carried over to the subsequent teaching session. The pennies earned during the teaching sessions and during other academic activities were exchanged for items in the classroom store.

4. A 5" x 8" cue card containing the following 12 instructional cues typed in numerical order which correspond to the 12 required seriated responses was constructed.

   1. "Read the problem."

   2. T drew a vertical line between the tens and ones place of the numbers through the answer slot (e.g., $\begin{array}{r|l} 1 & 2 \\ \underline{+1} & \underline{2} \\ & \end{array}$) and issued cue: "Read the ones' side of the problem."

   3. "How many do you count up on the ones' side?"

   4. For problems in which the second digit in the ones' column is greater than zero: "Make a fist, count out that many fingers." For problems in which the second digit in the ones' column is zero: "How many fingers do you count up for zero?"

   5. "Work the problem."

   6. "What is the answer, (S responded), write it."

7. "Read the tens' side of the problem."

8. "How many do you count up on the tens' side?"

9. For a 2 digit number plus a 2 digit number problem, (e.g., $\begin{array}{r}12\\ \underline{+12}\end{array}$) which has a second digit in the tens' column: "Make a fist, count out that many fingers." For a 2 digit number plus a 1 digit number problems, (e.g., $\begin{array}{r}12\\ \underline{+\ 2}\end{array}$) which does not have a second digit in the tens' column: "How many fingers do you count up for nothing?"

10. "Work the problem on the tens' side."

11. "What is the answer, (S responded), write it."

12. "Read the whole problem."

5. Data sheets used to record progress on each individual problem of Sets I-T and I-G are presented in Appendix A.

Arrangement

Five Ss, 4 of which were receiving instruction in this program, were divided into groups of 2 Ss each. The remaining S received instruction on prerequisites to this program and was included for group instructional purposes. Baseline and teaching procedures were implemented in 2 Ss and 1 T settings. The arrangement of the 3 groups during teaching sessions was as follows: Ss 1 and 2 were seated at a trapezoidal table. S_1 was seated facing T and S_2 was seated to the right or left of T.

Phase II:

Materials

1. Phase II required the use of 4 addition problems which were divided into 2 sets of 2 problems each (Set II-T and Set II-G). Set II-T consisted of 2 Teaching Problems (T1, T2); Set II-G consisted of 2 correlated Generalization Problems (G1, G2). The following are the Teaching Problems of Set II-G:

Set II-T:			Set II-G:	
T1	11* +17	*first digit in ones' column was selected from 1-5 range, inclusively	G1	13* +16
T2	10* +18	*first digit in ones' column was 0	G2	10* +17

The correlation between problems T1 and G1 is based on the following:

a. The second digits of the ones' columns were selected from the 1-5 range, inclusively.
b. The second digits of the ones' columns were selected from the 6-9 range, inclusively. Selection from this range guaranteed that the problem could be solved using two hands of fingers.

The correlation between problems T2 and G2 is based on the following:

a. The first digits in the ones' columns were 0.
b. The second digits of the ones' columns were selected from the 6-9 range, inclusively. Selection from this range guaranteed that the problem could be solved using two hands of fingers.

All Teaching Problems in Set II-T and all Generalization Problems in Set II-G were printed vertically, mimeographed and cut into individual problem cards which measured approximately 3 1/2" x 2 1/2." The numerals on each problem card were 3/4" in height. Each problem card had the set number and individual problem number written in the upper left hand corner.

2. Each S was provided a pencil and an eraser.

3. The consequences dispensed for correctly completing a problem without assistance were as follows:
   a. Verbal praise (e.g., "Fantastic working," "Great job.")
   b. T shook hand of S.
   c. During instruction two tokens were issued immediately upon correct completion of a problem in Set II-T and II-G. One token was also issued to S_2 who was not receiving direct instruction but who was sitting quietly or attending to T or the working S. At the completion of a teaching session, S exchanged 5 tokens for 1 penny. Remaining tokens were carried over to the subsequent teaching session. The pennies earned during the teaching sessions and during other academic activities were exchanged for items in the classroom store.

4. A 5" x 8" cue card containing the twelve instructional cues typed in numerical order. (See Phase I, Materials, Cue Card)

5. Data sheets used to record progress on each individual problem of Sets II-T and II-G are presented in Appendix A.

Arrangement

Six Ss, 5 of which were receiving instruction in this program, were divided into groups of 2 Ss each. The remaining S received instruction on prerequisites to this program and was included with the 5 Ss for group instructional purposes.

Baseline and teaching procedures were implemented in 2 *S*s and 1 *T* settings. The arrangement of the 3 groups during teaching sessions was as follows: *S*s 1 and 2 were seated at a trapezoidal table. $\underline{S}_1$ was seated facing *T* and $\underline{S}_2$ was seated to the right or left of *T*.

The problems in Phases III and IV consisted of numbers which were selected from the following numerical range:
a. The top numbers were selected from the 10-19 range, inclusively.
b. The bottom numbers were selected from the 0-9 range, inclusively when the combination of the top and bottom numbers did not require a carrying procedure.

Phase III:

Materials

1. Phase III required the use of 8 addition problems which were divided into 2 sets of 4 problems each (Set III-T and Set III-G). Set III-T consisted of 4 Teaching Problems (T1, T2, T3, T4); Set III-G consisted of 4 correlated Generalization Problems (G1, G2, G3, G4). The following are the Teaching Problems of Set III-T and the correlated Generalization Problems of Set III-G:

Set III-T:			Set III-G:	
T1	12* + 2	*first digit in ones' column was selected from 1-5 range, inclusively	G1	13* + 4
T2	16* + 1	*first digit in ones' column was selected from 6-9 range, inclusively	G2	17* + 2
T3	18* + 0	*first digit in ones' column was selected from 6-9 range, inclusively	G3	19* + 0
T4	10* + 3	*first digit in ones' column was 0	G4	10* + 1

The correlation between problems T1 and G1 is based on the following:
a. The first digits in the ones' columns were selected from the 1-5 range, inclusively.
b. The second digits of the ones' columns were selected from the 1-5 range, inclusively. Selection from this range guaranteed that the problem could be solved using only one hand of fingers.

The correlation between problems T2 and G2 is based on the following:

a. The first digits in the ones' columns were selected from the 6-9 range, inclusively.
b. The second digits of the ones' columns were selected from the 1-5 range, inclusively. Selection from this range guaranteed that the problem could be solved using only one hand of fingers.

The correlation between problems T3 and G3 is based on the following:
a. The first digits in the ones' columns were selected from the 6-9 range, inclusively.
b. The second digits in the ones' column were 0.

The correlation between problems T4 and G4 is based on the following:
a. The first digits in the ones' columns were 0.
b. The second digits of the ones' columns were selected from the 1-5 range, inclusively. Selection from this range guaranteed that the problem could be solved using only one hand of fingers.

All Teaching Problems in Set III-T and all Generalization Problems in Set III-G were printed vertically, mimeographed and cut into individual problem cards which measured approximately 3 1/2" x 2 1/2." The numerals on each problem card were 3/4" in height. Each problem card had the set number and individual problem number written in the upper left hand corner.

2. Each S̲ was provided a pencil and an eraser.

3. The consequences dispensed for correctly completing a problem without assistance were as follows:
   a. Verbal praise (e.g., "Fantastic working," "Great job.")
   b. T̲ shook hand of S̲.
   c. During instruction two tokens were issued immediately upon correct completion of a problem in Sets III-T and III-G. One token was also issued to $\underline{S}_2$ who was not receiving direct instruction but who was sitting quietly or attending to T̲ or the working S̲. At the completion of a teaching session S̲ exchanged 5̲ tokens for 1 penny. Remaining tokens were carried over to the subsequent teaching session. The pennies earned during the teaching sessions and during other academic activities were exchanged for items in the classroom store.

4. A 5" x 8" cue card containing the twelve instructional cues typed in numerical order. (See Phase I, Materials, Cue Card).

5. Data sheets used to record progress on each individual problem of Sets III-T and III-G are presented in Appendix A.

Arrangement

Six Ss, 5 of which were receiving instruction in this program, were divided into groups of 2 Ss each. The remaining S received instruction on prerequisites to this program and was included with the 5 Ss for group instructional purposes. Baseline and teaching procedures were implemented in 2 Ss and 1 T settings. The arrangement of the 3 groups during teaching sessions was as follows: Ss 1 and 2 were seated at a trapezoidal table. S_1 was seated facing T and S_2 was seated to the right or left of T.

Phase IV:

Materials

1. Phase IV required the use of 4 addition problems which were divided into 2 sets of 2 problems each (Set IV-T and Set IV-G). Set IV-T consisted of 2 Teaching Problems (T1, T2); Set IV-G consisted of 2 correlated Generalization Problems (G1, G2). The following are the Teaching Problems of Set IV-T and the correlated Generalization Problems of Set IV-G:

Set IV-T:			Set IV-G:	
T1	13* + 6	*first digits in ones' column was selected from 1-5 range, inclusively	G1	12* + 7
T2	10* + 8	*first digits in ones' column was 0	G2	10* + 9

The correlation between problems T1 and G1 is based on the following:

a. The first digits in the ones' columns were selected from the 1-5 range, inclusively.
b. The second digits of the ones' columns were selected from the 6-9 range, inclusively. Selection from this range guaranteed that the problem could be solved using two hands of fingers.

The correlation between problems T2 and G2 is based on the following:

a. The first digits in the ones' columns were 0.
b. The second digits of the ones' columns were selected from the 6-9 range, inclusively. Selection from this range guaranteed that the problem could be solved using two hands of fingers.

All Teaching Problems in Set IV-T and all Generalization Problems in Set IV-G were printed vertically, mimeographed and cut into individual problem cards which measured approximately 3 1/2" x 2 1/2." The numerals on each problem card were 3/4" in height. Each problem card had the set number and individual problem number written in the upper left hand corner.

2. Each S was provided a pencil and an eraser.

3. The consequences dispensed for correctly completing a problem without assistance were as follows:
   a. Verbal praise (e.g., "Fantastic working," "Great job.")
   b. T shook hand of S.
   c. During instruction two tokens were issued immediately upon correct completion of a problem in Set IV-T and IV-G. One token was also issued to S_2 who was not receiving direct instruction but who was sitting quietly or attending to T or the working S. At the completion of a teaching session S exchanged 5 tokens for 1 penny. Remaining tokens were carried over to the subsequent teaching session. The pennies earned during the teaching sessions and during other academic activities were exchanged for items in the classroom store.

4. A 5" x 8" cue card containing the twelve instructional cues typed in numerical order. (See Phase I, Materials, Cue Card)

5. Data sheets used to record progress on each individual problem of Sets IV-T and IV-G are presented in Appendix A.

Arrangement

Six Ss, 5 of which were receiving instruction in this program, were divided into groups of 2 Ss each. The remaining S received instruction on prerequisites to this program and was included with the 5 Ss for group instructional purposes. Baseline and teaching procedures were implemented in 2 Ss and 1 T settings. The arrangement of the 3 groups during teaching sessions was as follows: Ss 1 and 2 were seated at a trapezoidal table. S_1 was seated facing T and S_2 was seated to the right or left of T.

Teaching Procedures

Phase I: Teaching Ss to solve two digit number plus two digit number addition problems without carrying, (e.g., $\begin{array}{r}12\\ \underline{+12}\end{array}$) in which the second digit in the ones' column was selected from the 0 to 5 range inclusively, by using a seriated problem solving procedure.

Baseline Procedures: Each S's ability to correctly solve the 4 Teaching Problems of Set I-T and the 4 correlated Generalization Problems of Set I-G by using a seriated problem solving procedure was obtained prior to instruction. Baseline measures were obtained as follows:

T presented problem card T1 to S_1 and issued the cue: "S_1, read and work the problem using your fingers." T recorded a correct response (+) on the data sheet for each correctly seriated response. If S_1 responded incorrectly, T marked an incorrect response (-) on the data sheet. It should be noted that responses were not recorded after the initial incorrect response. As soon as S_1 completed or ceased working the problem, T said "Thank you," but did not give any indication as to accuracy. T then removed the problem from S_1, and presented S_2 with problem G1. T then issued the cue "S_2, read and work the problem using your fingers", and recorded a correct response for each correctly seriated response. If S_2 responded incorrectly, T recorded an incorrect response. It should be noted that responses were not recorded after the initial incorrect response. As soon as S_2 completed or ceased working the problem, T said "Thank you," but did not give any indication as to accuracy. T then removed the problem card from S_2, presented S_1 with problem card T2, and issued the cue, "S_1, read and work the problem using your fingers." etc. This procedure was followed until each S had the opportunity to respond to each of the 4 Teaching Problems of Set I-T and each of the 4 correlated Generalization Problems of Set I-G.

Teaching Procedures: T presented problem card T1 to S_1 and issued the verbal cue: "S_1, read and work the problem using your fingers." As S_1 progressed through the problem without error, T recorded each correctly seriated response. If S_1 solved a problem by correctly performing all 12 seriated responses, T smiled, verbally praised S, provided 2 tokens, shook S's hand and removed the problem. T then presented a different problem card to S_2 and issued the verbal cue, "S_2, read and work the problem using your fingers" etc. If S_1 made an error response teaching procedures were immediately initiated until S_1 solved the problem correctly *with* the assistance of T. Two types of teaching procedures were used depending upon whether S made one or more errors. That is, error responses were divided into two categories: Type A Errors were defined as the first incorrect response made. After the initial error response was corrected, T then proceeded to issue remaining instructional cues until S solved the problem correctly. If S_1 made an error response to the remaining instructional cues, that error was considered a Type B Error and different instructional procedures were initiated. A more detailed explanation of Type A and Type B Errors and their respective teaching procedures is outlined below:

Type A Error: The first time S_1 did not respond or responded incorrectly, T immediately said, "No, wrong" and recorded an incorrect response. T then provided the instructional cue (See Phase I-Materials-Cue Card) for the response *prior* to the error response, unless S_1 incorrectly responded on the first response in which case the first instructional cue was issued. The procedures used to correct Type A Errors are presented below:

a. If S_1 responded correctly to the instructional cue for the response *prior* to the initial error response, *T* verbally praised S_1 and then issued the instructional cue for the "error response." If S_1 responded incorrectly to the instructional cue for the response *prior* to the initial error response (a second error), *T* initiated the teaching procedure outlined for this Type B Error.

b. If S_1 responded correctly to the instructional cue for the "error response", *T* verbally praised S_1 and then issued the instructional cues for the remaining responses, verbally praising each correct response until S_1 solved the problem *with* the assistance of *T*. When the problem was solved, *T* verbally praised S_1 and presented the contingency that if S_1 completed the next problem *without* assistance from *T*, she would receive a hand shake and 2 tokens.

c. If S_1 responded incorrectly to the instructional cue for the "error response", *T* repeated the instructional cue. If S_1 responded correctly, *T* verbally praised S_1 and then issued the instructional cues for the remaining responses, verbally praising each correct response until S_1 solved the problem *with* the assistance of *T*. Upon completion of the problem, *T* verbally praised S_1 and presented the contingency that if S_1 completed the next problem *without* assistance from *T*, she would receive a hand shake and 2 tokens.

d. If S_1 continued to respond incorrectly to the instructional cue for the "error response", *T* repeated the instructional cue, modeled the correct response and then reissued the instructional cue. If S_1 responded correctly, *T* verbally praised S_1 and then issued the instructional cues for the remaining responses, until S_1 solved the problem *with* the assistance of *T*. Upon completion of the problem, *T* verbally praised S_1 and presented the contingency that if S_1 solved the next problem *without* assistance from *T*, she would receive a hand shake and 2 tokens.

e. If S_1 continued to respond incorrectly to the instructional cue for the error response, the procedure described in c above was repeated.

Type B Error: If S_1 responded incorrectly to any of the remaining cues after the initial error was corrected, T repeated the instructional cue for the "error response" but did not give the instructional cue for the response prior to the error response. The procedures used to correct Type B Errors are presented below:

a. If S_1 responded correctly to the instructional cue for the "error response", T verbally praised S_1 and then issued the instructional cues for the remaining responses verbally praising each correct response until S_1 solved the problem with the assistance of T. Upon completion of the problem, T verbally praised S_1 and then presented the contingency that if S_1 solved the next problem without assistance from T, she would receive a hand shake and 2 tokens.

b. If S_1 responded incorrectly to the instructional cue for the "error response", T repeated the instructional cue. If S_1 responded correctly, T verbally praised S_1 and then issued the instructional cues for the remaining responses verbally praising each correct response until S_1 solved the problem with the assistance of T. When the problem was completed, T verbally praised S_1 and presented the contingency that if S_1 solved the next problem without the assistance of T, she would receive a hand shake and 2 tokens.

c. If S_1 continued to respond incorrectly to the instructional cue for the "error response", T repeated the instructional cue, modeled the correct response and then reissued the instructional cue. If S_1 responded correctly, T verbally praised S_1 and then issued the instructional cues for the remaining responses, verbally praising each correct response until S_1 solved the problem with the assistance of T. When the problem was completed, T verbally praised S_1 and presented the contingency that if S_1 completed the next problem without assistance from T, she would receive a hand shake and 2 tokens.

d. If S_1 continued to respond incorrectly to the instruction cue for the "error response", the procedure described in c above was repeated.

These procedures were followed until S_1 solved all problems without the assistance of T.

Phase II: *Teaching Ss to solve two digit number plus two digit number addition problems without carrying, (e.g.,* $\begin{array}{r}11\\ +17\\ \hline\end{array}$ *) in which the second digit in the ones' column was selected from the 6 to 9 range inclusively, by using a seriated problem solving procedure*.

Baseline procedures: Baseline measures of each *S*'s ability to correctly solve the 2 Teaching Problems of Set II-T and the 2 correlated Generalization Problems of Set II-G by using a seriated problem solving procedure were obtained individually prior to instruction.

Since *S*s attained criterion performance in Phase I at different times, baseline measures of the skills required in Phase II were obtained in a group setting while instruction on the skills required in Phase I was being provided. Baseline measures were obtained as follows: *T* presented problem card T1 to S_1 and issued the cue: "S_1, read and work the problem using your fingers." *T* recorded a correct response for each correctly seriated response. If S_1 responded incorrectly, *T* recorded an incorrect response on the data sheet. It should be noted that responses were not recorded after the initial incorrect response. As soon as S_1 completed or ceased working the problem, *T* said, "Thank you," but did not give any indication as to accuracy. *T* then removed the problem, presented S_1 with problem card T2 and issued the cue, "S_1, read and work the problem using your fingers."

These procedures were followed until each *S* had the opportunity to respond to each of the 2 Teaching Problems of Set II-T and each of the 2 correlated Generalization Problems of Set II-G.

Teaching procedures: The Teaching Procedures used to teach the skills required in Phase I were used to teach the skills required in Phase II.

Phase III: *Teaching Ss to solve two digit number plus one digit number addition problems without carrying, (e.g.,* $\begin{array}{r}10\\ +\ 2\\ \hline\end{array}$ *) in which the second digit in the ones' column was selected from the 0 to 5 range inclusively by using a seriated problem solving procedure*.

Baseline procedures: The procedures used to obtain baseline measures of the skills required in Phase III were the same as the baseline procedures described in Phase II.

Teaching procedures: The procedures used to teach the skills required in Phase II were used in Phase II with the exception that instructional cue 9 was modified as follows:

For a 2 digit number plus a one digit number addition problem which did not have a second digit in the tens' column the cue "How many fingers do you count up for nothing?" was used.

Phase IV: Teaching Ss to solve two digit number plus one digit number addition problems without carrying, (e.g., $\begin{array}{r}11\\ +\ 8\\ \hline\end{array}$) in which the second digit in the ones' column was selected from the 6 to 9 range inclusively, by using a seriated problem solving procedure.

Baseline procedures: The procedure used to obtain baseline measures of the skills required in Phase IV were those used in Phases I, II and III.

Teaching procedures: The procedures used to teach the skills required in Phase IV were the same as those used in Phase III.

RESULTS

Measures of each S's ability to perform the skills required in Phases I-IV were obtained prior to (baseline) and during instruction (teaching). A general design of the entire program is outlined as follows:

1. Baseline Phase I
2. Teach Phase I
3. Baseline Phase II
4. Teach Phase II
5. Baseline Phase III
6. Teach Phase III
7. Baseline Phase IV
8. Teach Phase IV

Definition of Criterion Performance for Each Type of Problem

For teaching problems (T), Ss were required to correctly solve each problem by performing twelve seriated responses on two consecutive occasions. For generalization problems (G), Ss were required to correctly solve each problem by performing twelve seriated responses on one occasion. For generalization teaching problems (GT), Ss were required to correctly solve each problem by performing twelve seriated responses on two consecutive occasions.

Phase I: Teaching Ss to solve two digit number plus two digit number addition problems without carrying, (e.g., $\begin{array}{r}12\\ +12\\ \hline\end{array}$) in which the second digit in the ones' column was selected from the 0 to 5 range inclusively, by using a seriated problem solving procedure.

The objective of Phase I was to teach Ss to correctly solve the 4 Teaching problems (T1, T2, T3, T4) of Set I-T and the 4 correlated Generalization problems (G1, G2, G3, G4) of Set I-G by performing twelve seriated responses. During each trial, each S could make from 0-12 correct responses.

During baseline $\underline{S}_1$ was given the opportunity to perform each of the problems of Set I-T and Set I-G. Following baseline measures, instruction on the Teaching problems was initiated as follows:

> $\underline{S}_1$ was given the opportunity to solve T1 correctly. If he did not do so, instruction was immediately provided. $\underline{S}_1$ was then given the opportunity to solve T2 correctly, etc. This procedure was followed until $\underline{S}_1$ correctly solved either T1, T2, T3, or T4 on _two_ consecutive occasions, at which time a corresponding Generalization problem was presented. For example, if $\underline{S}_1$ reached criterion on T1, he was then given the opportunity to solve G1. If $\underline{S}_1$ solved G1, process generalization was assumed, the problem was dropped from formal instruction and Teaching problems were reintroduced. If $\underline{S}_1$ did not solve G1 correctly, instruction was immediately provided. Problem G1 was then considered a Generalization Teaching problem and instruction was provided until $\underline{S}_1$ correctly solved the problem on _two_ consecutive occasions at which time that problem was dropped from formal instruction. It should be noted and emphasized that a different problem (T, G, or GT) was presented on each consecutive trial. These procedures were followed until $\underline{S}_1$ solved the 4 Teaching and the 4 Generalization problems.

$\underline{S}_1$ - The performance of $\underline{S}_1$ is graphically depicted in Figure A-1 and can be summarized as follows:

Baseline Measures: $\underline{S}_1$ performed one correct response on each of the 4 Teaching problems and 4 Generalization problems (Figure A-1, Part A).

Teaching:

$\underline{S}_1$ reached criterion performance on problem T1 after 12 teaching trials (Figure A-1, Part B).

$\underline{S}_1$ reached criterion performance on problem T2 after 13 teaching trials (Figure A-1, Part C).

$\underline{S}_1$ reached criterion performance on problem G1 on trial 25 (Figure A-1, Part D).

$\underline{S}_1$ did not emit criterion performance on G2 on trial 26. Problem G2 was then included in formal instruction as GT2 (Figure A-1, Part E).

$\underline{S}_1$ reached criterion performance on problem T4 after 19 teaching trials (Figure A-1, Part F).

$\underline{S}_1$ reached criterion performance on problem T3 after 21 teaching trials (Figure A-1, Part G).

$\underline{S}_1$ reached criterion performance on problem G4 on trial 31 (Figure A-1, Part H).

$\underline{S}_1$ reached criterion performance on problem G3 on trial 33 (Figure A-1, Part I).

$\underline{S}_1$ reached criterion performance on problem GT2 after 28 teaching trials (Figure A-1, Part J).

$\underline{S}_2$ - The performance of $\underline{S}_2$ is graphically depicted in Figure A-2 and can be summarized as follows:

Baseline Measures: $\underline{S}_2$ performed one correct response on each of the 4 Teaching problems and 4 Generalization problems (Figure A-2, Part A).

Teaching:

$\underline{S}_2$ reached criterion performance on problem T2 after 21 teaching trials (Figure A-2, Part B).

$\underline{S}_2$ reached criterion performance on problem G2 on trial 34 (Figure A-2, Part C).

$\underline{S}_2$ reached criterion performance on problem T3 after 29 teaching trials (Figure A-2, Part D).

$\underline{S}_2$ reached criterion performance on problem G3 on trial 41 (Figure A-2, Part E).

$\underline{S}_2$ reached criterion performance on problem T4 after 37 teaching trials (Figure A-2, Part F).

$\underline{S}_2$ reached criterion performance on problem T1 after 38 teaching trials (Figure A-2, Part G).

$\underline{S}_2$ reached criterion performance on problem G4 on trial 48 (Figure A-2, Part H).

$\underline{S}_2$ reached criterion performance on problem G1 on trial 49 (Figure A-2, Part I).

$\underline{S}_3$ - The performance of $\underline{S}_3$ is graphically depicted in Figure A-3 and can be summarized as follows:

Baseline Measures: $\underline{S}_3$ performed one correct response on each of the 4 Teaching problems and 4 Generalization problems (Figure A-3, Part A).

Teaching:

$\underline{S}_3$ reached criterion performance on problem T3 after 30 teaching trials (Figure A-3, Part B).

$\underline{S}_3$ reached criterion performance on problem T4 after 31 teaching trials (Figure A-3, Part C).

$\underline{S}_3$ reached criterion performance on problem G3 on trial 43 (Figure A-3, Part D).

$\underline{S}_3$ did not emit criterion performance on G4 on trial 44 (Figure A-3, Part E).

$\underline{S}_3$ reached criterion performance on problem T2 after 37 teaching trials (Figure A-3, Part F).

$\underline{S}_3$ reached criterion performance on problem T1 after 39 teaching trials (Figure A-3, Part G).

$\underline{S}_3$ reached criterion performance on problem G2 on trial 49 (Figure A-3, Part H).

$\underline{S}_3$ reached criterion performance on problem GT4 after 41 teaching trials (Figure A-3, Part I).

$\underline{S}_3$ reached criterion performance on problem G1 on trial 51 (Figure A-3, Part J).

$\underline{S}_4$ - The performance of $\underline{S}_4$ is graphically depicted in Figure A-4 and can be summarized as follows:

Baseline Measures: $\underline{S}_4$ performed one correct response on each of the 4 Teaching problems and 4 Generalization problems (Figure A-4, Part A).

Teaching:

$\underline{S}_4$ reached criterion performance on problem T1 after 20 teaching trials (Figure A-4, Part B).

$\underline{S}_4$ did not emit criterion performance on G1 on trial 33 (Figure A-4, Part C).

$\underline{S}_4$ reached criterion performance on problem T2 after 29 teaching trials (Figure A-4, Part D).

$\underline{S}_4$ reached criterion performance on problem GT1 after 32 teaching trials (Figure A-4, Part E).

$\underline{S}_4$ reached criterion performance on problem G2 on trial 42 (Figure A-4, Part F).

$\underline{S}_4$ reached criterion performance on problem T4 after 35 teaching trials (Figure A-4, Part G).

$\underline{S}_4$ reached criterion performance on problem G4 on trial 46 (Figure A-4, Part H).

$\underline{S}_4$ reached criterion performance on problem T3 after 39 teaching trials (Figure A-4, Part I).

$\underline{S}_4$ reached criterion performance on problem G3 on trial 49 (Figure A-4, Part J).

Phase II: Teaching Ss to solve two digit number plus two digit number addition problems without carrying, (e.g., $\begin{array}{r} 11 \\ \underline{+17} \end{array}$) in which the second digit in the ones' column was selected from the 6 to 9 range inclusively, by using a seriated problem solving procedure.

The objective of Phase II was to teach Ss to correctly solve the 2 Teaching problems (T1, T2) of Set II-T and the 2 correlated Generalization problems (G1, G2) of Set II-G by performing twelve seriated responses. During each trial an S could make from 0-12 correct responses.

During baseline Ss were given the opportunity to perform each of the problems of Set II-T and Set II-G.

S_1 - The performance of S_1 is graphically depicted in Figure B-1 and can be summarized as follows:

Baseline Measures: S_1 performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure B-1, Part A). This was accepted as criterion performance for Phase II.

S_2 - The performance of S_2 is graphically depicted in Figure B-2 and can be summarized as follows:

Baseline Measures: S_2 performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure B-2, Part A). This was accepted as criterion performance for Phase II.

S_3 - The performance of S_3 is graphically depicted in Figure B-3 and can be summarized as follows:

Baseline Measures: S_3 performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure B-3, Part A). This was accepted as criterion performance for Phase II.

S_4 - The performance of S_4 is graphically depicted in Figure B-4 and can be summarized as follows:

Baseline Measures: S_4 performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure B-4, Part A). This was accepted as criterion performance for Phase II.

Phase III: Teaching Ss to solve two digit number plus one digit number addition problems without carrying, (e.g., $\begin{array}{r} 10 \\ \underline{+\ 2} \end{array}$) in which the second digit in the ones' column was selected from the 0 to 5 range inclusively, by using a seriated problem solving procedure.

The objective of Phase III was to teach *S*s to correctly solve the 4 Teaching problems (T1, T2, T3, T4) of Set III-T and the 4 correlated Generalization problems (G1, G2, G3, G4) of Set III-G by performing twelve seriated responses. During each trial an *S* could make from 0-12 correct responses.

During baseline $\underline{S}_1$ was given the opportunity to perform each of the problems of Set III-T and Set III-G. Following baseline measures instruction on the Teaching problems was initiated as was stated in Phase I.

The performance of $\underline{S}_1$ is graphically depicted in Figure C-1 and can be summarized as follows:

Baseline Measures: $\underline{S}_1$ performed no correct responses for problem T1, 1 correct response for problem T2, T3, T4 and G1 respectively, 6 correct responses for problem G2, 2 correct responses for problems G3 and G4 respectively (Figure C-1, Part A).

Teaching:

$\underline{S}_1$ reached criterion performance on problem T2 after 5 teaching trials (Figure C-1, Part B).

$\underline{S}_1$ reached criterion performance on problem T4 after 7 teaching trials (Figure C-1, Part C).

$\underline{S}_1$ reached criterion performance on problem T1 after 8 teaching trials (Figure C-1, Part D).

$\underline{S}_1$ reached criterion performance on problem G2 on trial 18 (Figure C-1, Part E).

$\underline{S}_1$ reached criterion performance on problem T3 after 10 teaching trials (Figure C-1, Part F).

$\underline{S}_1$ reached criterion performance on problem G4 on trial 20 (Figure C-1, Part G).

$\underline{S}_1$ reached criterion performance on problem G1 on trial 21 (Figure C-1, Part H).

$\underline{S}_1$ reached criterion performance on problem G3 on trial 22 (Figure C-1, Part I).

$\underline{S}_2$ - The performance of $\underline{S}_2$ is graphically depicted in Figure C-2 and can be summarized as follows:

Baseline Measures: $\underline{S}_2$ performed 2 correct responses for problems T1, T2, T3 and T4 respectively, 6 correct responses for problem G1, 4 correct responses for problem G2, 6 correct responses for problems G3 and G4 respectively (Figure C-2, Part A).

Teaching:

$\underline{S}_2$ reached criterion performance on problem T4 after 7 teaching trials (Figure C-2, Part B).

$\underline{S}_2$ reached criterion performance on problem T3 after 10 teaching trials (Figure C-2, Part C).

$\underline{S}_2$ reached criterion performance on problem G4 on trial 20 (Figure C-2, Part D).

$\underline{S}_2$ reached criterion performance on problem T1 after 12 teaching trials (Figure C-2, Part E).

$\underline{S}_2$ reached criterion performance on problem T2 after 13 teaching trials (Figure C-2, Part F).

$\underline{S}_2$ reached criterion performance on problem G3 on trial 23 (Figure C-2, Part G).

$\underline{S}_2$ reached criterion performance on problem G1 on trial 24 (Figure C-2, Part H).

$\underline{S}_2$ reached criterion performance on problem G2 on trial 25 (Figure C-2, Part I).

$\underline{S}_3$ - The performance of $\underline{S}_3$ is graphically depicted in Figure C-3 and can be summarized as follows:

Baseline Measures: $\underline{S}_3$ performed one correct response on each of the 4 Teaching problems and 4 Generalization problems (Figure C-3, Part A).

Teaching:

$\underline{S}_3$ reached criterion performance on problem T1 after 24 teaching trials (Figure C-3, Part B).

$\underline{S}_3$ reached criterion performance on problem T2 after 25 teaching trials (Figure C-3, Part C).

$\underline{S}_3$ reached criterion performance on problem T3 after 26 teaching trials (Figure C-3, Part D).

$\underline{S}_3$ reached criterion performance on problem T4 after 27 teaching trials (Figure C-3, Part E).

$\underline{S}_3$ reached criterion performance on problem G1 on trial 37 (Figure C-3, Part F).

$\underline{S}_3$ reached criterion performance on problem G2 on trial 38 (Figure C-3, Part G).

$\underline{S}_3$ reached criterion performance on problem G3 on trial 39 (Figure C-3, Part H).

$\underline{S}_3$ reached criterion performance on problem G4 on trial 40 (Figure C-3, Part I).

$\underline{S}_4$ - The performance of $\underline{S}_4$ is graphically depicted in Figure C-4 and can be summarized as follows:

Baseline Measures: $\underline{S}_4$ performed 6 correct responses on problem T1, 4 correct responses on problem T2, 3 correct responses on problem T3, 6 correct responses on problem T4, 7 correct responses on problems G1 and G2, respectively, 3 correct responses on problem G3 and 7 correct responses on problem G4 (Figure C-4, Part A).

Teaching:

$\underline{S}_4$ reached criterion performance on problem T3 after 6 teaching trials (Figure C-4, Part B).

$\underline{S}_4$ reached criterion performance on problem T4 after 7 teaching trials (Figure C-4, Part C).

$\underline{S}_4$ reached criterion performance on problem G3 on trial 19 (Figure C-4, Part D).

$\underline{S}_4$ reached criterion performance on problem G4 on trial 20 (Figure C-4, Part E).

$\underline{S}_4$ reached criterion performance on problem T2 after 13 teaching trials (Figure C-4, Part F).

$\underline{S}_4$ reached criterion performance on problem T1 after 14 teaching trials (Figure C-4, Part G).

$\underline{S}_4$ reached criterion performance on problem G1 on trial 24 (Figure C-4, Part H).

$\underline{S}_4$ reached criterion performance on problem G2 on trial 25 (Figure C-4, Part I).

Phase IV: *Teaching Ss to solve two digit number plus one digit number addition problems without carrying, (e.g.,* $\begin{array}{r}11)\\ \underline{+\ 8}\end{array}$ *in which the second digit in the ones' column was selected from the 6 to 9 range inclusively, by using a seriated problem solving procedure*.

The objective of Phase IV was to teach *S*s to correctly solve the 2 Teaching problems (T1, T2) of Set IV-T and the 2 correlated Generalization problems (G1, G2) of Set IV-G by performing twelve seriated responses. During each trial, a *S* could make from 0-12 correct responses.

During baseline measures, *S*s were given the opportunity to perform each of the problems of Set IV-T and Set IV-G.

$\underline{S}_1$ - The performance of $\underline{S}_1$ is graphically depicted in Figure D-1 and can be summarized as follows:

Baseline Measures: $\underline{S}_1$ performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure D-1, Part A). This was accepted as criterion performance for Phase IV.

$\underline{S}_2$ - The performance of $\underline{S}_2$ is graphically depicted in Figure D-2 and can be summarized as follows:

Baseline Measures: $\underline{S}_2$ performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure D-2, Part A). This was accepted as criterion performance for Phase IV.

$\underline{S}_3$ - The performance of $\underline{S}_3$ is graphically depicted in Figure D-3 and can be summarized as follows:

Baseline Measures: $\underline{S}_3$ performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure D-3, Part A). This was accepted as criterion performance for Phase IV.

$\underline{S}_4$ - The performance of $\underline{S}_4$ is graphically depicted in Figure D-4 and can be summarized as follows:

Baseline Measures: $\underline{S}_4$ performed 12 correct responses on each of the 2 Teaching problems and 2 Generalization problems (Figure D-4, Part A). This was accepted as criterion performance for Phase IV.

DISCUSSION

The major instructional objectives were realized in that the four students demonstrated the ability to solve two digit number plus two digit number addition problems without carrying and two digit number plus a one digit number addition problem without carrying by using a seriated problem solving procedure. In addition, student performance strongly suggests the presence of process generalization in that substantially fewer teaching trials were required in order to exact criterion performance on generalization problems as compared to teaching problems. For example, all four students performed at criterion in the baseline trials of Phases II and IV.

As the seriated problem solving procedure was perhaps the most crucial component of the program, several characteristics of that procedure should be emphasized:

> First, the seriated problem solving procedure required the performance of twelve observable responses which could be measured readily. This facilitated the precise delineation and immediate remediation of error responses.

Second, the problem solving procedure was designed to develop systematic problem attack skills in that the students were required to read the entire problem, divide it into components and then arrive at a solution. It is hypothesized that these problem attack skills were crucial to process generalization.

Third, a forward chaining procedure was used to teach the twelve seriated responses. The forward chaining procedure required the presence of independent responses in the repertoires of the students. Then the instructional environment was arranged whereby the initial instructional cue was a discriminative stimulus for the first response. The first response then became a discriminative stimulus for the performance of the second response, etc. until all twelve responses occurred in a series. In addition, it should be emphasized that when a student made an initial error response, the teacher issued the instructional cue for the response prior to the error response in an attempt to reinstate the performance of the correct response chain. When a student responded correctly, the teacher then provided seriated verbal cues for the remaining responses in the chain.

In summary, this program has demonstrated that severely handicapped students were taught to use finger manipulation methods to solve two digit number addition problems without carrying. The teacher interested in extending or streamlining the procedures described here might consider at least the following:

A. The teacher might choose to teach the students to solve the problems rapidly, as high rate skills will be required in practical settings. After the students completed the program, they were individually timed in order to establish the amount of time necessary to complete one problem from each of the four phases. The average times required to solve problems from Phases I, II, III and IV were 47, 56, 48 and 51 seconds respectively.

B. The teacher might teach the students finger configurations for numbers 0-9. That is, the students will simply hold out and not count the amount of fingers designated by a number within a problem. This would eliminate the need for responses four and nine in the problem solving procedure.

C. The teacher might teach the students to delineate the largest number in a column and count out fingers for the smallest, rather than delineating the first number in a column and counting out fingers for the second.

D. The teacher might teach the students to use the finger manipulation method to solve two digit number addition problems with carrying and two digit number subtraction problems with and without borrowing.

E. The teacher might choose to teach the students to apply the procedure of solving two digit number addition problems without carrying in other settings such as word problems and money problems involving amounts less than a dollar. This, of course, would require the concomitant development of relevant language, reading and social skills.

The physical limitations of the finger manipulation method are obvious for students who are orthopedically handicapped or who are missing fingers. Alternative manipulation methods such as using an abacus or a hand counter are tenable alternatives.

In fact, one procedural adaptation should be reported. During instruction, a modification of the response for step 5 was initiated by $\underline{S}_1$. $\underline{S}_1$ had a great deal of difficulty in raising and lowering each outstretched finger. The modification allowed $\underline{S}_1$ to raise all of his fingers at once, and lower one finger at a time while labeling it with a number. Since the topography of the modified response resembled the original response, i.e., raising and lowering each finger while $\underline{S}_1$ labeled it with a number, it was accepted as appropriate.

Finally, teachers might choose to teach their severely handicapped students to use pocket calculators, thereby avoiding, at least temporarily, many of the instructional difficulties alluded to above.

APPENDIX A

Phase I*

Example Data Sheets

DATE: ____________________ CUE: "READ AND WORK THE PROBLEM USING YOUR FINGERS."

Student	1	2	1	2	1	2	1	2
Problem	'T_1	'T_1	'T_2	'T_2	'T_3	'T_3	'T_4	'T_4
1. S reads problem aloud.	+	+						
2. S reads ones' side of problem aloud.	+	+						
3. S labels "count up" sign and the second numeral in the ones' column.	+	+						
4. S makes fist on table & counts out fingers designated by 2nd numeral by outstretching one finger at a time. For "count up zero" problems, S makes fist & says, "no fingers."	-	+						
5. S reads 1st numeral of ones' column, the "count up" sign & counts up on his fingers beginning with the number that follows the 1st numeral. For "count up zero" problems, S reads the first numeral, the "count up" sign, the zero amount as "no fingers," and says, "equals" (the 1st numeral of the ones' column.)		+						
6. S writes the answer beneath the "equality bar" under the ones' column.		+						
7. S reads tens' side of the problem aloud.		+						
8. S labels "count up" sign and the 2nd numeral in the tens' column.		+						
9. S makes fist - same as in step 4.		+						
10. Same as in step 5. For "count up nothing" problems, S reads the 1st numeral, the "count up" sign, the null amount as "no fingers," and says, "equals (the 1st numeral of the tens' column.")		-						
11. S writes answer beneath the "Equality bar" in the tens' column.								
12. S reads entire problem and solution.								
Number correct in order:	3	9						

*This data sheet was used in Phases I, II, III and IV.

FIGURE A1
Performance of S_1 on Phase I

PARTS
A. Baseline performance on 4 Teaching problems and 4 Generalization problems
B. On trial 21, criterion performance was obtained on T1.
C. On trial 22, criterion performance was obtained on T2.
D. On trial 25, criterion performance was obtained on G1.
E. On trial 26, criterion performance was not obtained on G2.
F. On trial 28, criterion performance was obtained on T4.
G. On trial 30, criterion performance was obtained on T3.
H. On trial 31, criterion performance was obtained on G4.
I. On trial 33, criterion performance was obtained on G3.
J. On trial 37, criterion performance was obtained on GT2.

Set I T		Set I G		Set GT	
T1	●	G1	○	GT2	☐
T2	■	G2	☐		
T3	▲	G3	△		
T4	✕	G4	✿		

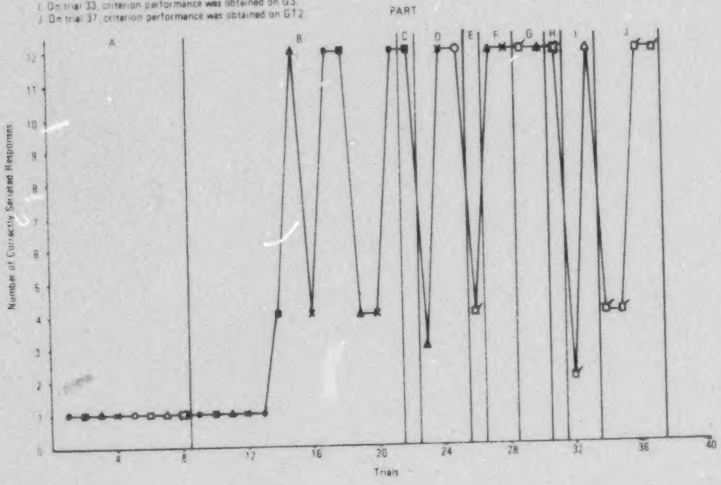

FIGURE A2
Performance of S_2 on Phase I

PARTS
A. The Baseline performance on 4 Teaching problems and 4 Generalization problems
B. On trial 30, criterion performance was obtained on T2.
C. On trial 34, criterion performance was obtained on G2.
D. On trial 38, criterion performance was obtained on T3.
E. On trial 41, criterion performance was obtained on G3.
F. On trial 46, criterion performance was obtained on T4.
G. On trial 47, criterion performance was obtained on T1.
H. On trial 48, criterion performance was obtained on G4.
I. On trial 49, criterion performance was obtained on G1.

Set I G		Set I T	
G1	○	T1	●
G2	☐	T2	■
G3	△	T3	▲
G4	✿	T4	✕

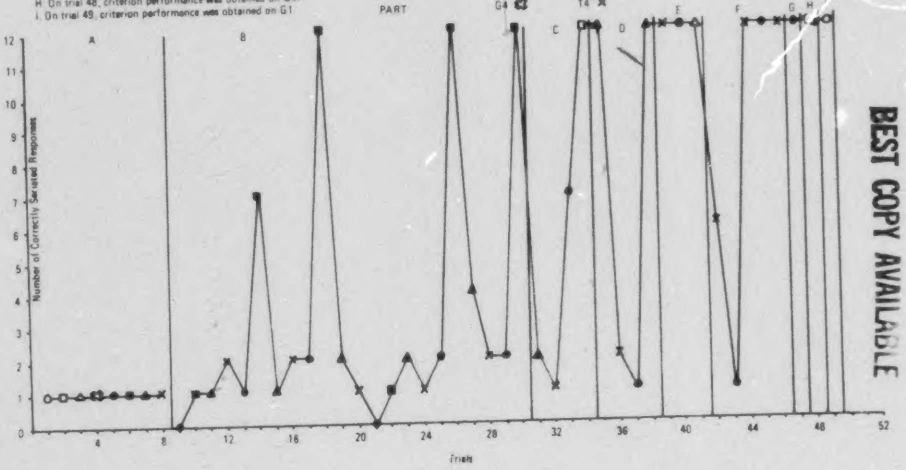

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FIGURE A3
Performance of S_3 on Phase I

PARTS
A. Baseline performance on 4 Teaching problems and 4 Generalization problems
B. On trial 39, criterion performance was obtained on T3.
C. On trial 40, criterion performance was obtained on T4.
D. On trial 43, criterion performance was obtained on G3.
E. On trial 44, criterion performance was not obtained on G4.
F. On trial 46, criterion performance was obtained on T2.
G. On trial 48, criterion performance was obtained on T1.
H. On trial 49, criterion performance was obtained on G2.
I. On trial 50, criterion performance was obtained on GT4.
J. On trial 51, criterion performance was obtained on G1.

Set I T		Set I G		Set GT	
T1	●	G1	○	GT4	✿
T2	■	G2	☐		
T3	▲	G3	△		
T4	✕	G4	✿		

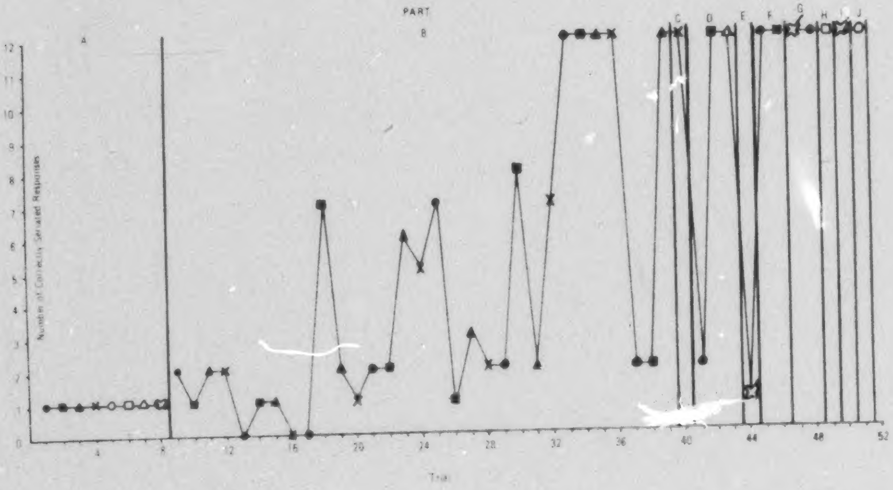


FIGURE A4
Performance of S_4 on Phase I

Set I G		Set I T		Set GT	
G1	○	T1	●	GT1	○
G2	☐	T2	■		
G3	△	T3	▲		
G4	✿	T4	✕		

PARTS
A. Baseline performance on 4 Teaching problems and 4 Generalization problems
B. On trial 29, criterion performance was obtained on T1.
C. On trial 33, criterion performance was not obtained on G1.
D. On trial 38, criterion performance was obtained on T2.
E. On trial 41, criterion performance was obtained on GT1.
F. On trial 42, criterion performance was obtained on G2.
G. On trial 44, criterion performance was obtained on T4.
H. On trial 46, criterion performance was obtained on G4.
I. On trial 48, criterion performance was obtained on T3.
J. On trial 49, criterion performance was obtained on G3.

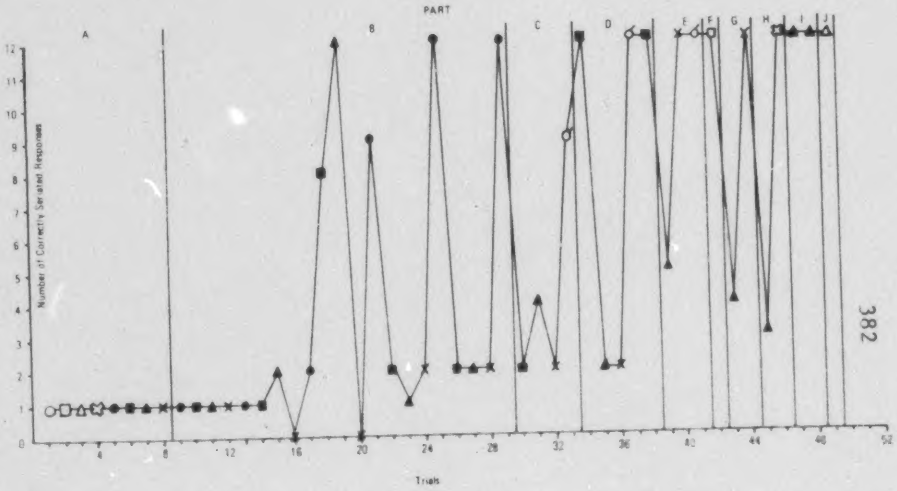
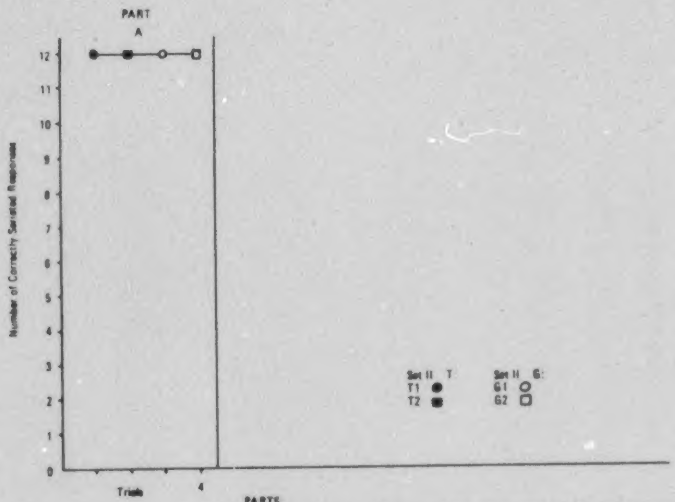
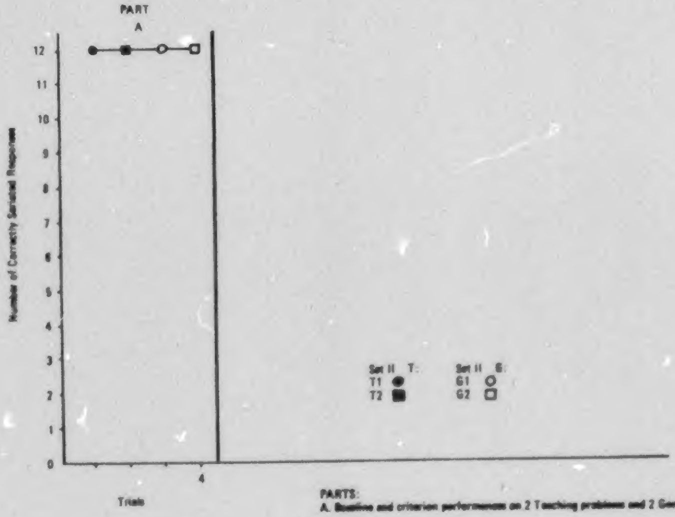


FIGURE B1
Performance of S_1 on Phase II



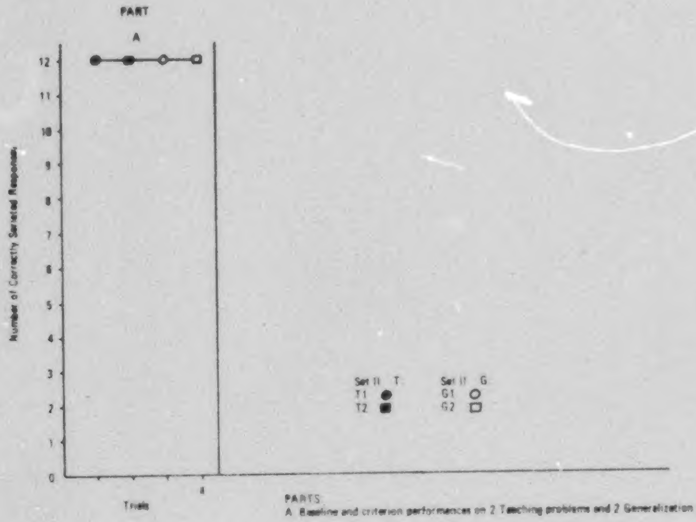
PARTS:
A. Baseline and criterion performances on 2 Teaching problems and 2 Generalization problems.

FIGURE B2
Performance of S_2 on Phase II



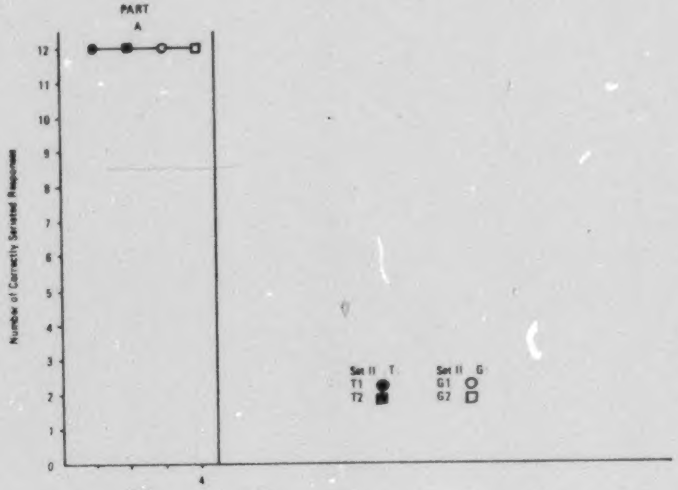
PARTS:
A. Baseline and criterion performances on 2 Teaching problems and 2 Generalization problems.

FIGURE B3
Performance of S_3 on Phase II



PARTS:
A. Baseline and criterion performances on 2 Teaching problems and 2 Generalization problems.

FIGURE B4
Performance of S_4 on Phase II



PARTS:
A. Baseline and criterion performances on 2 Teaching problems and 2 Generalization problems.

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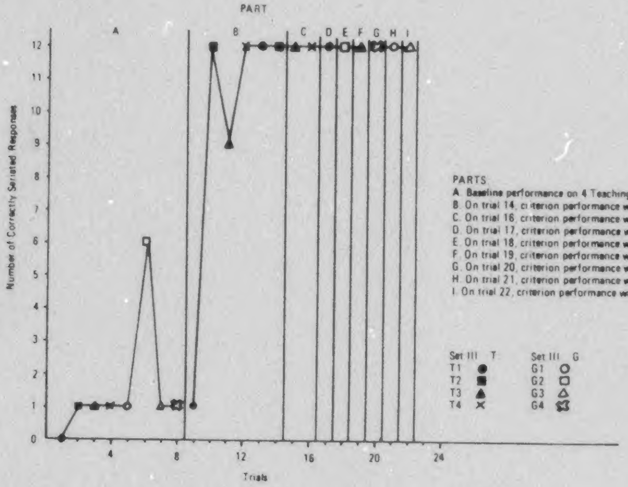
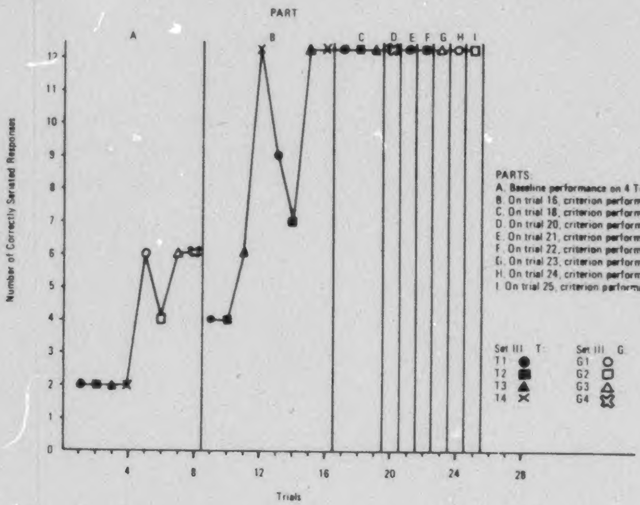
FIGURE C1
Performance of S_1 on Phase III



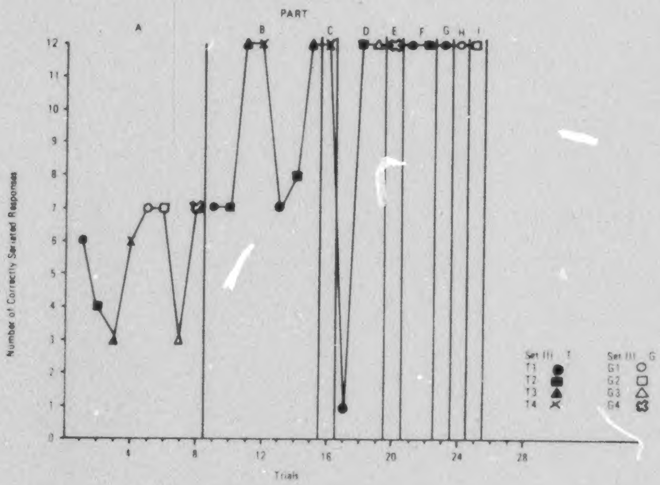
PARTS
A. Baseline performance on 4 Teaching problems and 4 Generalization problems.
B. On trial 14, criterion performance was obtained on T2.
C. On trial 16, criterion performance was obtained on T4.
D. On trial 17, criterion performance was obtained on T1.
E. On trial 18, criterion performance was obtained on G2.
F. On trial 19, criterion performance was obtained on T3.
G. On trial 20, criterion performance was obtained on G4.
H. On trial 21, criterion performance was obtained on G1.
I. On trial 22, criterion performance was obtained on G3.

FIGURE C2
Performance of S_2 on Phase III



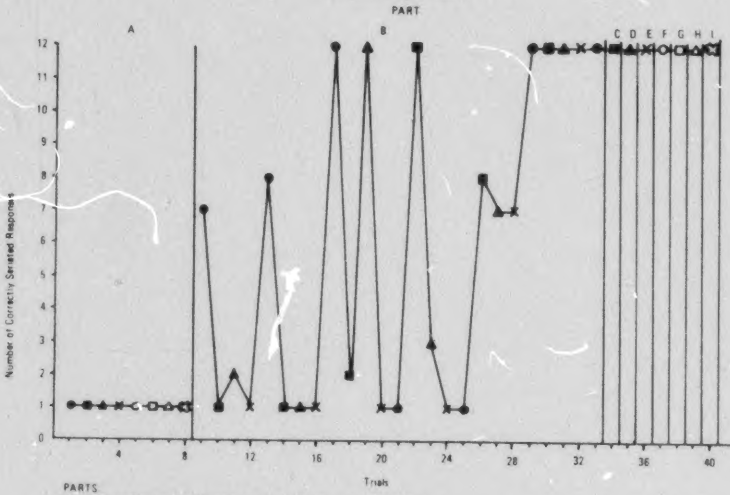
PARTS
A. Baseline performance on 4 Teaching problems and 4 Generalization problems
B. On trial 16, criterion performance was obtained on T4.
C. On trial 18, criterion performance was obtained on T3.
D. On trial 20, criterion performance was obtained on G4.
E. On trial 21, criterion performance was obtained on T1.
F. On trial 22, criterion performance was obtained on T2.
G. On trial 23, criterion performance was obtained on T3.
H. On trial 24, criterion performance was obtained on G1.
I. On trial 25, criterion performance was obtained on G2.

FIGURE C4
Performance of S_4 on Phase III



PARTS
A. Baseline performance on 4 Teaching problems and 4 Generalization problems.
B. On trial 15, criterion performance was obtained on T3.
C. On trial 16, criterion performance was obtained on T4.
D. On trial 19, criterion performance was obtained on G3.
E. On trial 20, criterion performance was obtained on G4.
F. On trial 22, criterion performance was obtained on T2.
G. On trial 23, criterion performance was obtained on T1.
H. On trial 24, criterion performance was obtained on G1.
I. On trial 25, criterion performance was obtained on G2.

FIGURE C3
Performance of S_3 on Phase III



PARTS
A. Baseline performance on 4 Teaching problems and 4 Generalization problems
B. On trial 33, criterion performance was obtained on T1.
C. On trial 34, criterion performance was obtained on T2.
D. On trial 35, criterion performance was obtained on T3.
E. On trial 36, criterion performance was obtained on T4.
F. On trial 37, criterion performance was obtained on G1.
G. On trial 38, criterion performance was obtained on G2.
H. On trial 39, criterion performance was obtained on G3.
I. On trial 40, criterion performance was obtained on G4.

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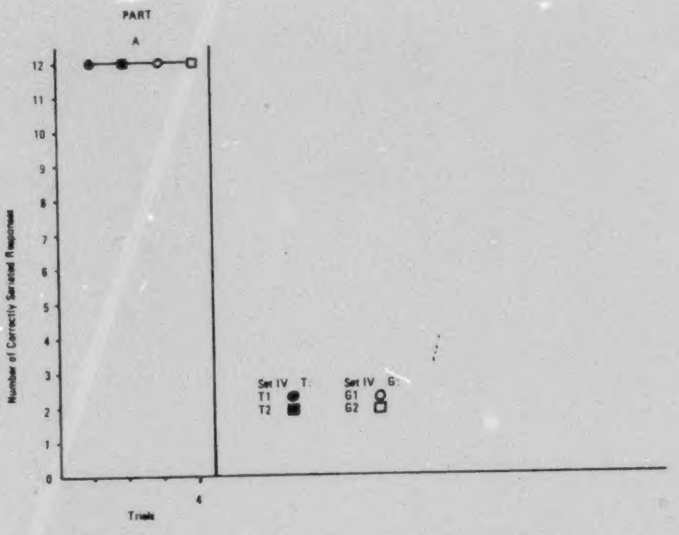
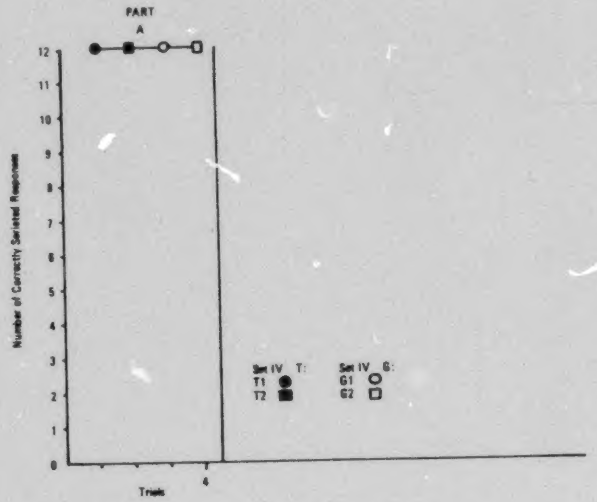
Performance of S_1 on Phase IV



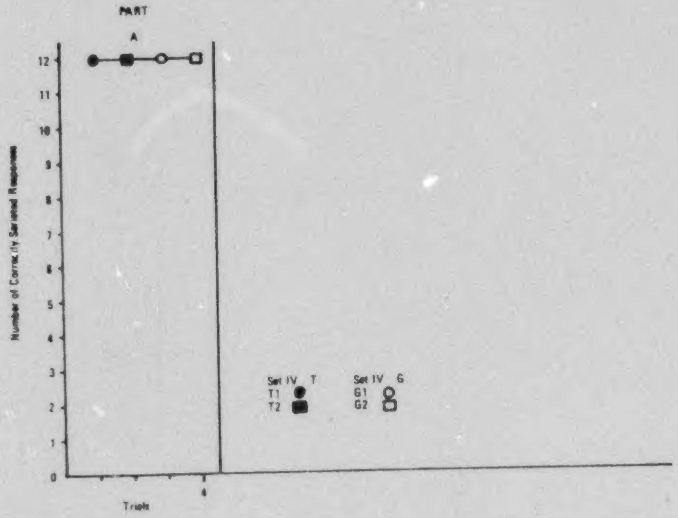
PARTS:
A. Baseline and criterion performances on 2 Teaching problems and 2 Generalization problems.

Performance of S_2 on Phase IV



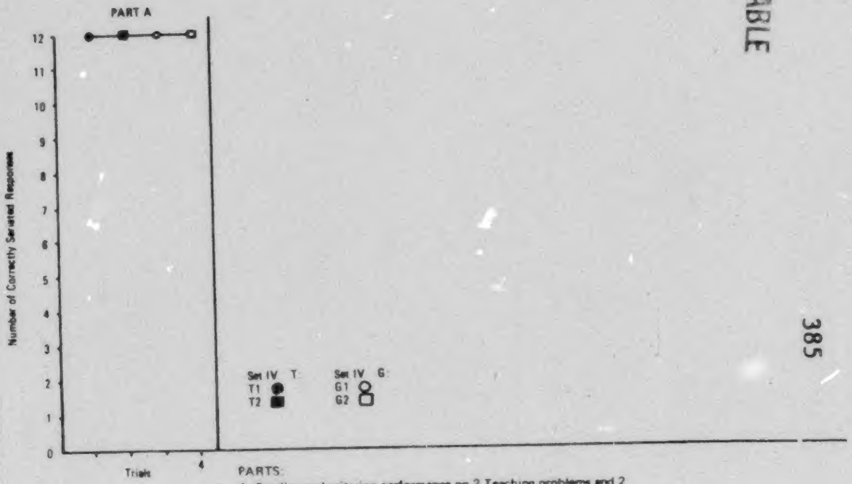
PARTS:
A. Baseline and criterion performances on 2 Teaching problems and 2 Generalization problems.

FIGURE D3
Performance of S_3 on Phase IV



PARTS
A. Baseline and criterion performances on 2 Teaching problems and 2 Generalization problems.

FIGURE D4
Performance of S_4 on Phase IV



PARTS:
A. Baseline and criterion performance on 2 Teaching problems and 2 Generalization problems.

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AN APPROXIMATION OF AN INSTRUCTIONAL MODEL FOR DEVELOPING HOME LIVING SKILLS IN SEVERELY HANDICAPPED STUDENTS

Sue Hamre

Due to a number of recent legislative and judicial actions it is quite probable that in the near future every child of school age in the United States will have direct access to a free public education. In the past, of course, public school administrations reserved the right to deny the access of some kinds of severely handicapped children to direct public school services and reject those children who did not seem to be benefiting from services the public schools had to offer. The reader, of course, will recognize those rejected as children who were too retarded, brain damaged, emotionally disturbed, physically handicapped, behaviorally hindered and/or seriously involved to be considered beneficiaries of educational services.

If, in fact, it becomes law that public schools provide educational services for all severely handicapped children, the public school community will be forced to examine and revise many of its time honored assumptions and practices concerning services provided to these children. That is, public school personnel will be required to become more tolerant of students who look, talk, move and otherwise respond differently than most other students. Public school personnel will be required to revise or add to their objectives of preparing students for college or relatively complex vocational settings. Public school personnel will be required to assume instructional responsibilities in relation to severely handicapped students that they have not assumed with other students.

Public school instructional personnel are now teaching severely handicapped students to read functional words, to perform simple mathematical computations, to speak in sentences, and to perform simulated and actual vocational tasks.

Hopefully, after attending public school from ages 5 to 21, these students will acquire many of the skills in the repertoires of adequately-functioning adults. As adults, they will be expected to live independent or semi-independent lives in a community rather than institutional setting. The skills necessary for adequate survival in a community obviously include more than those related to traditional

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elementary school academics. Many skills typically acquired in the home (e.g., brushing teeth or brushing hair) and taken for granted by most school personnel must be systematically taught to severely handicapped students. That is, formerly "extra-school" tasks now must be considered an integral part of public school curricula for severely handicapped students. Such programming will necessarily be coordinated with parental instruction for maximum skill development and maintenance in the home environment.

As severely handicapped students become increasingly visible in the community, much of the community's tolerance will be a function of outward appearances. A large part of outward appearance will depend on the degree to which the person can independently perform critical self-care skills. Thus, learning to perform self-care skills is a necessary part of "normalization."

Severely handicapped students who will be living in independent or semi-independent community settings must be able to perform what may be referred to as "home living" skills. Home living skills are an integral part of a broad spectrum of essential community survival skills. Personal hygiene, cleanliness and proper diet all lead to personal, vocational, recreational and social enhancement.

The task of determining the content of a home living skills program which may begin at age 5 and continue through age 21, may seem gigantic to a classroom teacher in that even after content is determined, systematic instructional techniques must be devised to impart the content.

This paper is primarily concerned with attempting to communicate information related to factors to which public school instructional personnel might attend when attempting to prepare severely handicapped students to function as independent adults in a community living setting. More specifically this paper is concerned with home living skills.

For organizational purposes the remainder of this paper will be divided into four parts. Part I consists of an attempt at delineating several basic survival skills that, if in the repertoire of an individual, would enhance the probability of independent community functioning. Part II consists of an attempt to communicate to the reader several basic task analysis principles. Part III consists of an attempt to communicate an instructional technology or the "how" of instruction; that is, the procedures a teacher might use to impart the content delineated in Parts I and II. In Part III two sample instructional programs will be presented in some detail. These programs are presented in an attempt to communicate to the reader several of the basic steps through which a teacher might progress as other home living skills are taught to severely handicapped students. Finally, several basic implications will be presented and discussed briefly in Part IV.

Part I: Basic Home Living Skills

In this section several basic home living skills are delineated. For organizational purposes the specific skills will be grouped as follows:

Basic Grooming Skills
Basic Dressing Skills
Basic Domestic Maintenance Skills
Basic Cooking Skills

Prior to the specific listing of the various skills, several factors should be noted. First, the list was developed during and after communication with parents, teachers, public school administrators, workshop administrators, vocational rehabilitation counselors, semi-independent residential facility personnel, and other persons concerned with providing severely handicapped students with the skills necessary to function effectively in a community living environment. Second, the list is tentative both in relevance and in comprehensiveness. That is, there are probably skills listed that are considered important to some people now but not to others (e.g., setting, styling hair). In addition, there are skills that will no doubt be added to the list in the future. Third, the list should be considered suggestive at best. We are not necessarily holding that these skills should be taught in a public school by classroom teachers without regard to parent attitudes, etc. We are only suggesting that it is important that all severely handicapped students be able to perform at the appropriate time and in the appropriate place the listed skills.

Finally, the list is essentially non-cumulative and non-developmental. That is, a student does not necessarily have to know how to correctly wash his own hairbrush prior to learning how to wash his own hair.

Basic Grooming Skills

1. Brushing hair
2. Parting hair
3. Washing hairbrush
4. Washing hair
5. Setting hair
6. Styling hair
7. Brushing teeth
8. Using mouthwash
9. Washing face (and neck area)
10. Treating acne
11. Washing hands
12. Using hand cream and body lotion
13. Cleaning under fingernails
14. Clipping fingernails
15. Filing fingernails
16. Cleaning ears
17. Washing underarm areas
18. Using deodorants
19. Washing feet
20. Cleaning toenails
21. Clipping toenails
22. Washing all critical skin areas with washcloth at sink
23. Taking a bath
24. Taking a shower
25. Shaving face (males)

26. Shaving underarms (females)
27. Shaving legs (females)
28. Menstrual hygiene
    a. Using sanitary equipment
    b. Cleansing genetalia
29. Sitting appropriately
30. Standing appropriately
31. Walking appropriately

Basic Dressing Skills

1. Zipping zippers (on the front and on the back of clothes)
2. Snapping snaps (on the front and on the back of clothes)
3. Buttoning buttons (on the front and on the back of clothes)
4. Hooking hooks and eyes (on the front and on the back of clothes)
5. Tieing ties (on the front and on the back of clothes)
6. Buckling buckles
7. Putting on a garment which opens down the front
8. Putting on garments over the head
9. Putting on pants
10. Putting on socks
11. Putting on shoes
12. Tieing shoes
13. Laceing a lace (shoe, lace-front shirt)
14. Straightening own clothes after they are on and/or messed up
15. Matching colors
16. Matching figures (stripes, plaids)
17. Matching types of clothes together
18. Fitting clothes (too large, too small)
19. Dressing appropriately for specific environment (church, work, play)
20. Dressing appropriately for different weather conditions

Basic Domestic Maintenance Skills

1. Cleaning (polishing) shoes
2. Washing clothes by hand
3. Sorting clothes by color before washing
4. Washing clothes by a washing machine
5. Hanging clothes to dry
6. Drying clothes in a dryer
7. Using public laundromat
    a. Washer
    b. Dryer
8. Folding flat clothes
9. Hanging clothes on hangers (blouses, shirts, pants)
10. Ironing flat clothes
11. Ironing non-flat clothes
12. Sewing on buttons

13. Mending a tear in a seam or in material
14. Darning a sock
15. Dusting flat and non-flat surfaces
16. Vacuuming a rug
17. Sweeping a floor, using dust pan
18. Wet-mopping a floor
19. Making a bed
    a. Changing bed linens
20. Doing dishes
    a. Clearing table
    b. Scraping dishes
    c. Washing, rinsing dishes
    d. Drying dishes
    e. Putting dishes away
21. Setting a table
22. Using table tools (spoon, fork, knife, cup)

Basic Cooking Skills

1. Using a can opener (hand)
2. Using a bottle opener
3. Setting stove burners to proper temperature
4. Setting a timer on an oven
5. Setting oven temperatures
6. Preparing simple breakfasts
    a. Toast with butter
    b. Cold cereal with milk
    c. Toaster waffle with butter and syrup
    d. Toaster french toast with butter and syrup
    e. Frozen orange juice
    f. Fried egg
    g. Fried bacon
7. Preparing simple lunches
    a. Sandwich with lunch meat
    b. Sandwich with cheese
    c. Sandwich with filling (egg salad, tuna salad)
    d. Fruit
        1) Canned
        2) Fresh
    e. Milk
    f. Canned soup (spaghetti, ravioli, etc.)
    g. Packing a balanced lunch in a bag
    h. Filling a thermos bottle
8. Preparing simple dinners
    a. TV dinner
    b. Canned dinners (beef stew, chili, chop suey, beans 'n franks, etc.)
    c. Canned vegetable
    d. Lettuce salad
    e. Instant mix dessert (pudding, jello)

9. Reading simple instructions on packages and cans
    a. Temperature
    b. Added ingredients
    c. How long to cook
10. Using measuring utensils (cups, spoons)
11. Choosing appropriate foods
    a. Fattening foods
    b. Non-fattening foods

Part II: Basic Principles of Task Analysis

In Part II attempts are made to communicate several basic principles of behavioristic task analysis. Perhaps the following quote is appropriate here:

> "First, the teacher must specify terminal objectives in behavioristic terms. That is, she must convert the required criterion performance into observable responses.
>
> Second, the teacher must analyze the criterion responses and divide them into a series of less complex responses.
>
> Third, the teacher must arrange the responses she decides are necessary for completion of the terminal response into a series.
>
> Fourth, the teacher must teach or verify the existence of the student's ability to perform each response in the series.
>
> Fifth, the teacher must teach the students to perform each response in the series in serial order.
>
> Sixth, in an attempt to delineate successes and failures, the teacher must record student performance during each training phase so that adjustments can be made during the teaching process." (Brown, Bellamy and Sontag, 1971, p. 3)

Prior to the provision of examples of how principles of task analyses might be used in the instruction of home living skills, several points should be added, reiterated or emphasized.

First, the primary purpose of performing an analysis of an instructional task is to present an easy to hard sequence of demands to a student that maximizes the probability of the student acquiring the skills inherent in the task.

Second, it is often quite difficult to make valid a priori discriminations as to the relative difficulty of components of a particular task. Thus a teacher is often confronted with the responsibility of judging or estimating the serial order of difficulty of task components.

Third, teachers should be aware that some students may be able to perform the more difficult components of certain tasks and not be able to perform the less difficult. Thus, it is usually a good strategy to assess the performance of the student on all tasks.

Fourth, as the stratification of the components of almost all tasks are arbitrary, a teacher must realize that she or he must continue to "slice" or arrange the task so that it becomes easier and easier for the student to perform the correct responses. Thus, a task analysis orientation is not a static phenomena. It may be necessary to present different analyses to different students as well as different analyses to the same student.

In Part I many different tasks related to home living skills were delineated. Here it is our intention to communicate to the reader how a task delineated in Part I might be analyzed into components. An example of how one of the skills listed in Part I, brushing teeth, might be analyzed is presented below:

A Sample Task Analysis: Brushing Teeth

1. Remove toothbrush and toothpaste from cup
2. Unscrew toothpaste cap
3. Squeeze appropriate amount of toothpaste onto brush
4. Lay toothbrush down
5. Screw cap back on tube
6. Pick up brush in preferred hand
7. Lean over sink
8. Brush in down motion over top teeth from one side of mouth to the other
9. Spit out excess at least once
10. Brush in up motion over bottom teeth from one side of mouth to the other
11. Spit out excess at least once
12. Brush in down motion over back of top teeth from one side of mouth to the other
13. Spit out excess at least once
14. Brush in up motion over back of bottom teeth from one side of mouth to the other
15. Spit out excess at least once
16. Brush back and forth over crowns of top teeth from one side of mouth to the other
17. Spit out excess at least once
18. Brush back and forth over crowns of bottom teeth from one side of mouth to the other
19. Spit out excess at least once
20. Pick up cup
21. Turn on cold water faucet
22. Fill cup with water

23. Rinse mouth with water
24. Spit out excess at least once
25. Pour excess water out of cup into sink
26. Replace cup next to sink
27. Rinse toothbrush in water
28. Turn off cold water faucet
29. Replace brush and paste in cup

Part III: Sample Instructional Programs

In Part III two different instructional programs will be presented. The term instructional program as it is used here refers to the delineation and arrangement of many skills a teacher should have into a systematic, organized sequence of events. Thus, in our view a program should include at least the following:

A. A rationale - A rationale for the program presented below is the introduction to the paper.

B. The students - A description of the students is presented below.

C. An instructional objective - The instructional objectives are delineated in Part I.

D. A task analysis - Analyses of two tasks of concern are presented below. In addition, a task analysis is described in Part II of this paper.

E. Instructional materials and arrangement - Both the instructional materials and how the students and materials were arranged in the classroom will be presented below.

F. Instructional procedures - The term instructional procedure, as it is used here, refers to the behavior the teacher engages in that results in the students acquiring the responses required by the task analysis. The instructional procedures used to teach the students the two sets of skills are delineated below.

G. Effects of instruction - Presumably, if a teacher engages in activities referred to in A - F above, the students will change in some demonstrable ways. The changes, if any, manifested by the students would then be the results of the program.

Program A: Brushing Hair

Students (Ss): Fifty-four Ss were initially involved in this program; 46 of these 54 Ss performed at criterion under baseline conditions. Thus, 8 Ss remained in the program.

The 8 Ss ranged in CA from 14 to 21 ($\bar{X} = 17.5$) and in MA from 3 to 11 ($\bar{X} = 7$). The most recently obtained IQ scores ranged from estimates below 30 to 54 ($\bar{X}$ = approximately 42). These Ss had been enrolled in public school classes for severely retarded or severely emotionally disturbed Ss from 3 to 16 years ($\bar{X} = 9.5$).

Cumulative records contained such descriptive statements as "trainably retarded," "severely defective," "limited comprehension," "limited memory," "does not participate in any activity except eating."

Task Analysis: The brushing hair task was divided into six sequenced steps:

1. Mess up hair with fingers
2. Pick up brush in preferred hand
3. Look at hair in mirror
4. Start brush at front top of head
5. Brush down through hair around entire head
6. Check brushed hair in mirror

Instructional Materials and Arrangements: Teaching was conducted twice weekly during two 45-minute periods in a "home living classroom" in a public school. Instructional responsibilities were shared by a teacher (T) and a student teacher (T). For instructional purposes the 8 Ss were divided into two groups (A & B) of four. The teacher was responsible for Group A and the student teacher was responsible for Group B.

Ss were seated in a semi-circle in front of an 18" x 32" x 52" bedroom dresser with a 34" x 40" mirror placed at eye level (See Appendix A). The S on the task was seated directly in front of the mirror (See Appendix A). A hairbrush was placed on the dresser top in front of S.

All initial responses were recorded as correct "+", performance error "P", or order error "O" (response is correct but occurs out of sequence) on data sheets (See Appendix B). Each data sheet contained space for each S's name on the far left column and each of the six steps was listed above vertical columns across the top. The total number of correct responses was recorded at the end of each teaching trial.

Instructional Procedures: Measures of baseline performance and performance during instruction were obtained in the same manner, with only response consequences differing. Baseline measures were obtained as follows:

When S was seated in front of the mirror, T instructed S to "Mess up your hair, then show me how you brush it, S." When S had completely finished, T said, "Thank you" whether or not the response(s) was correct or incorrect and recorded S's performance on each of the six components of the tasks. This procedure was followed until each of the 8 Ss had the opportunity to perform the task without assistance on two occasions.

After baseline measures were obtained, instruction was initiated as follows:

1. T approached the class, seated the Ss behind her and said, "Now I will show you how to brush your hair neatly. Watch very closely, because later I will ask you to do it just like I do."

2. T then modeled the entire sequence, as she verbally labeled the action of each step; e.g., "I mess up my hair," "I look in the mirror," "I brush all around my head." The entire modeling and labeling procedure was then repeated for the group. Before T gave Ss their trials at the task, she explained that if a student brushed as she had shown him, she would tell him what a good job he had done, pat him on the back and/or shake hands with him.

3. Subsequently T selected one of the four Ss in a group, placed him or her in front of the mirror and said, "Mess up your hair, then show me how you brush it, S." Initially, Ss were given social praise, such as "Great job of looking in the mirror!", "Beautiful brushing!", after each step performed correctly.

4. If an S performed a step incorrectly, T stopped S and said "No, S, do it like this" and modeled the correct response on her own hair. If S then performed correctly, T said "Good." If S again performed incorrectly, T physically primed the correct response while saying "See, you are brushing, S," for example.

5. T then gradually attenuated reinforcement schedule so that S had to perform more and more steps correctly before praise was delivered.

6. The three remaining Ss in the group were instructed to attend to the S receiving instruction. During instruction T periodically posed such questions to the group as, "Where is S looking?" "What is S using to brush her hair?" Ss were praised by T both individually and as a group for good attending to task.

Effects of Instruction: As previously stated, the brushing hair task was divided into six components. The ability of each of the 8 Ss to perform the six steps in the predefined order was measured. Thus, in any given trial a particular S could make from 0-6 correct responses. While individual data is available for each of the 8 Ss only the performance of one S will be graphically depicted here.

During the two trial baseline periods the 8 Ss performed from one to three of the six steps correctly. Subsequently, a criterion was set at four consecutive errorless trials or 24 consecutive correct responses per S. It should be noted that during instruction the total number of steps performed correctly were recorded on individual graphs, while the Ss were present, immediately after the training session. T verbally praised an S for "going up" on the graph. If an S stayed at the level of the previous trial or "went down" on the graph, T urged him or her to "try harder" next time, etc.

All Ss performed at the criterion level. However, individual Ss reached criterion after differing amounts of instruction. That is, the number of instructional trials required before Ss reached criterion ranged from 11 to 18 ($\bar{X}$ = 14.6).

Depicted in Figure I below is the performance of S_1. As can be discerned from Figure I, during the baseline period (trials 1 & 2) S_1 performed 3 and 3 correct responses. At trial 3 instruction was initiated and S_1 reached criterion at trial 17 after 15 teaching trials.

Program B: Washing Hair

Students (Ss): Thirty-nine Ss including 19 males and 20 females (3 groups of 11, 13 and 15) received instruction in the washing hair program. Ss ranged in CA from 14-21 ($\bar{X}$ = 17.5); in MA from 3-14 ($\bar{X}$ = 8.5); in IQ scores from 35-70 ($\bar{X}$ = 52.5); and in years in school from 7-16 ($\bar{X}$ = 11.5).

Cumulative records contained such descriptive statements as "aphasic," "autistic," "unable to perform complex tasks with hands," "severely physically handicapped," "cerebral palsied."

Task Analysis: Washing Hair The washing hair task was analyzed and divided into 36 basic steps. The additional steps are for use with those girls who might need to creme rinse their hair.

1. Secure all supplies (hairbrush, shampoo, towel and creme rinse for girls)
2. Arrange all supplies next to sink
3. Pick up brush in preferred hand
4. Brush through hair all around head
5. Lay brush next to sink
6. Turn on hot and cold water faucets
7. Test water temperature (warm) with fingers
8. Lean head over sink
9. Spray over entire head with sprayer (students could choose to use a cup or the running water for rinsing)
10. Turn off both faucets
11. While leaning over sink, uncap shampoo
12. Fill cap with shampoo

13. Pour capful of shampoo into palm of hand
14. Lay shampoo cap next to bottle
15. Using both hands, rub shampoo into hair over entire head
16. Using both hands, work up lather over entire head
17. Turn on hot and cold water faucets
18. Test water temperature (warm) with fingers
19. Lean head over sink
20. Spray over entire head with sprayer
21. Rinse out all soap
22. Turn off hot and cold water faucets
23. Pick up shampoo cap
24. Pour capful of shampoo into palm of hand
25. Put shampoo cap on bottle
26. Using both hands, rub shampoo into hair over entire head
27. Using both hands, work up lather over entire head
28. Turn on hot and cold water faucets
29. Test water temperature (warm) with fingers
30. Lean head over sink
31. Spray over entire head with sprayer
32. Rinse out all soap
33. Turn off hot and cold water faucets (Girls using creme rinse omit steps 34-36 at this point.)

34. Using both hands, squeeze out excess water from hair
35. Pick up towel
36. Rub towel over hair to soak up excess moisture

Follow steps 34 through 46 for girls using creme rinse

34a. Uncap creme rinse
35a. Pour appropriate amount of creme rinse into palm of hand
36a. Using both hands, rub creme rinse into hair over entire head
37. Put cap on creme rinse
38. Turn on hot and cold water faucets
39. Test water temperature (warm) with fingers
40. Lean head over sink
41. Spray over entire head with sprayer
42. Rinse out all creme rinse
43. Turn off hot and cold water faucets
44. Using both hands, squeeze out excess water from hair
45. Pick up towel
46. Rub towel over hair to soak up excess moisture

Following the above procedures, wet towels were placed in an automatic dryer in the classroom. Several students were instructed in the operation of the dryer.

Instructional Materials and Arrangement: Teaching was conducted four times per week during 45 minute class sessions. All teaching was conducted by a teacher ($\overline{T}$), a student teacher ($\overline{T}$), and a teacher aide ($\overline{T}$). Due to the relatively long time periods required by the task and the absence of a large number of sinks (2) only two $\underline{Ss}$ received instruction in a session.

The classroom was divided by a portable room divider and each half was equipped with a 24' x 36' x 64' sink area with faucets for hot and cold water and an attached drainboard. A 28" x 30" x 36" portable cupboard with countertop was placed to the immediate right of the sink (See Appendix C).

Supplies used for washing hair included a plastic bottle of shampoo, a plastic bottle of creme rinse and a bath-size towel. These supplies were located on shelves behind a door of the portable cupboard. Hairbrushes, labeled with each *S*'s name, were placed on a shelf-top to the right of the sink area (See Appendix C).

The *S* at task stood in front of the sink, while *T* and the remaining *Ss* stood around *S* in the sink area (See Appendix C).

Data sheets, designed for this task, were used for recording each *S*'s initial responses as correct "+", performance error "P", or order error "O" (See Appendix D).

Instructional Procedures: Measures of baseline performance and performance during instruction were obtained in the same manner, with only response consequences differing.

Baseline measures were obtained as follows:

When S was standing in front of a sink *T* said: "Show me how you wash your hair, *S*. You may use these supplies (pointing to an open cupboard which contained shampoo, creme rinse and towels)." When *S* had indicated he or she was finished, *T* said "Thank you" whether or not S had completed the task correctly. While *S* was attempting to complete the task *T* was recording the number of correct responses made on a data sheet.

This procedure was followed until each of the 39 *Ss* had one opportunity to wash their hair without assistance (time prevented gathering more baseline data).

After baseline measures were obtained, instruction was initiated as follows:

1. *T* arranged (standing) a group in front of the sink and said, "Now I am going to show you how to wash your hair. Keep your eyes on me. Later I will ask you to wash your hair just as I do." *T* then modeled the entire hair-washing sequence for the group. While *T* was modeling the task she verbally labeled the component movements. That is, *T* would say "Now I am rinsing my hair," or "Now I am lathering my hair with shampoo" while she was performing such movements. This procedure was followed on two occasions. Thus, each group had the opportunity to observe *T* perform the sequence correctly on two consecutive occasions.

2. *T* selected an *S* from the group and requested that he or she come to the sink and then said, "Show me how you wash your hair, S." If *S* performed a step in the sequence correctly, *T* would say, for example, "That's great!" "You have all your supplies ready!" "Good brushing!"

3. If *S* performed a step incorrectly or out of order *T* intervened by stopping *S* and saying, "No, that is not correct. Do it like this." as *T* performed the required movements on the *S*'s hair.

4. *S* was then instructed to repeat the movement modeled by *T* and then to proceed.

5. If *S* performed the movement correctly he or she was praised and instructed to proceed to the next step.

6. If *S* did not respond correctly, *T* primed *S* (i.e., physically guided *S* through the movements) through the correct response and *S* was then instructed to proceed to the next step.

The following procedural points should be noted at this time:

A. Priming cues, i.e., physical assistance, were removed until an *S* could perform a required task without assistance.

B. Modeling cues were gradually faded until *S* could perform the task without the assistance of *T*.

C. Social praise was gradually faded in that *Ss* were required to perform more and more steps in the sequence correctly before *T* would issue praise.

D. While one *S* was receiving instruction the remaining *Ss* in the group were praised for attending and were asked to respond to questions like, "Wasn't that good?" or "Did she do it right?" or "What should she do next?"

Effects of Instruction: Continuous measures of the performance of all *Ss* were obtained during the baseline and the teaching phases of the program. During the baseline period (trial I) male Ss could make from 0 to 36 correct responses and female Ss could make from 0 to 46 correct responses. It should be noted that in order for a response to be scored as correct it has to be performed correctly and it has to occur in an acceptable order. Strict adherence to the order delineated in the task analysis was required only if an alternative sequence was unacceptable (e.g., spray head with sprayer, step 31 before step 30, lean head over sink).

During the baseline trial the 19 male Ss made from 3 to 20 correct responses out of a possible 36 ($\bar{X}$ correct = 8.8) and female Ss made from 1 to 15 correct responses out of a possible 46 ($\bar{X}$ correct = 8.8).

Prior to instruction, criterion performance was set at three consecutive errorless trials. By the end of the school year 32 of the 39 Ss reached criterion (14 males and 18 females). The number of training trials required before criterion was reached by the male Ss ranged from 5 to 15 ($\bar{X}$ = 9.7) and by the female Ss ranged from 3 to 19 ($\bar{X}$ = 10.0).

The 7 remaining Ss (5 males & 2 females) did not perform at criterion levels by the end of the school year. On the other hand the 2 male Ss made 30 and 36 correct responses out of a possible 36 on the last training trial and the 5 female Ss made 44, 44, 45, 45 and 45 correct responses out of a possible 46 on the last training trial of the school year.

In an attempt to avoid redundancy only the performance of one S (female) will be graphically depicted in Figure II. As can be discerned from Figure II, S_1 made 16 correct responses during the baseline trial and a total of 11 training trials were required before S_1 reached criterion at trial 12.

Part IV: Discussion and Implications

The application of behavioristic task analysis procedures and systematic instructional technology to specified instructional objectives resulted in the development of several home living skills in severely handicapped students.

The students did perform the steps involved in the skills presented to them in the public school classroom environment; the very nature of these skills requires that they be performed other than in the classroom where the teacher model is present. The skills must generalize across settings into the natural home environment. Some attempt to insure generalization was made by gradually withdrawing (fading) the assistance and reinforcement of the teacher. Other examples of such attempts include taking the students to other settings within the school; e.g., after students had met criterion performance on washing a hairbrush they were taken to two different rooms with stimuli (type of sink, supplies in different areas) re-arranged. There was also an attempt made to have the students observed performing the task in the home environment. A checklist (Appendix E) of steps involved in the washing hair task was sent to the parents when the student had reached criterion performance. The return of checklists was not representative in that only 10 of the 32 sent were returned. However, all 10 indicated satisfaction with the performance of the children at home. For any home living skills program to be truly successful, further attempt to insure performance in the students' present and future home environments must be made.

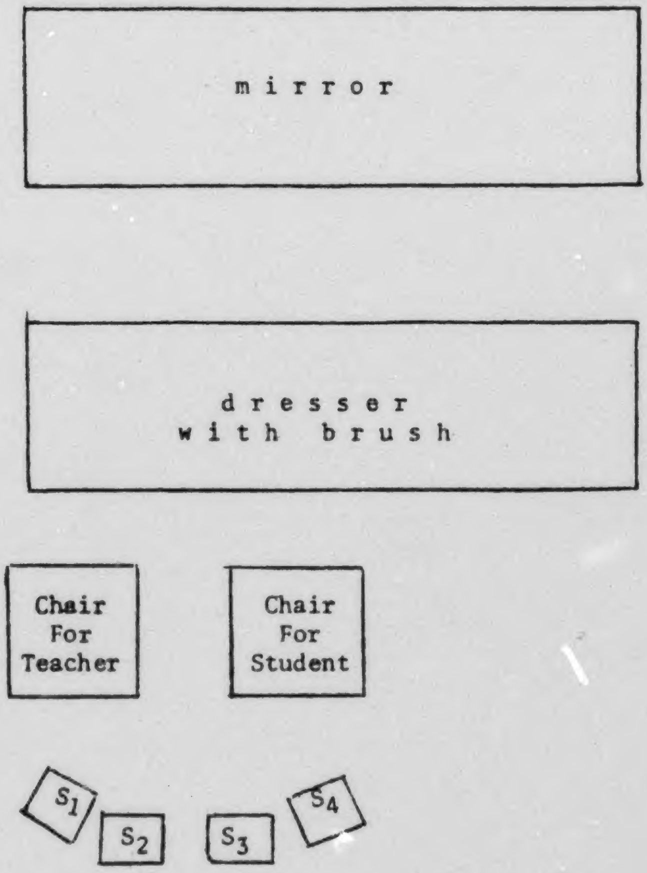
A possible method of better preparing students to perform the skills necessary for independent or semi-independent survival would call for a cooperative public school personnel - parent training program. In this way, parents as well as school personnel could consistently assist and reinforce those steps involved in acquisition of vital skills. Even after skills are acquired, parents and the home environment must repeatedly demand the performance of these skills or they will be lost.

A limitation of the present program, not readily discernible from the results, is the relatively large amount of time spent in teaching the task of washing hair, for example. The results indicate that some students required 19 trials to acquire the skill. Considering the limitations of 45 minute class periods in limited space and with a high pupil-teacher ratio, the task took some students almost seven months to acquire. Because of the large number of home living skills to be taught, these limitations would need to be reduced or eliminated in future programs. If the programming did indeed begin at age 5 or earlier, instead of in adolescence, a great time element could be eliminated. Many aspects of the program are, at the time of this writing, being implemented with lower age children in the same public school setting.

Not all of the tasks delineated in Part I have presently been analyzed and taught. It is our hope that further task analyses will be completed and presented in the classroom in the near future by those currently involved and by other school personnel, especially those involved in instructing lower age students.

APPENDIX A

Instructional Arrangement for Brushing Hair



Students in Chairs

APPENDIX B

Data Sheet for Brushing Hair

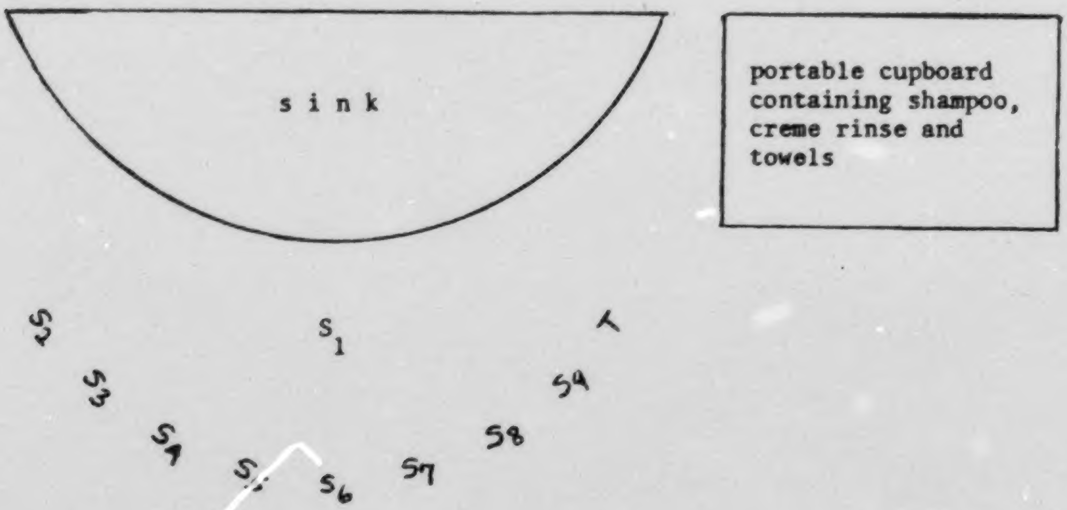
+ = correct response
P = performance error (incorrect response)
O = order error (incorrect response)

Group ________
Date ________

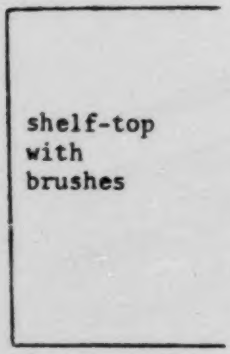
Students	Pick up brush	Look at hair in mirror	Start brush at front top	Brush down at least 6 strokes around head	Do not comb hair over part	Check brushed hair in mirror	Total correct
Joe							
Mike							
Alice							
Sue							
Joe							
Mike							
Alice							
Sue							

APPENDIX C

Instructional Arrangement for Washing Hair


sink
portable cupboard containing shampoo, creme rinse and towels
S2
S1
T
S3
S9
S4
S8
S5
S6
S7

Students and teacher standing



APPENDIX D

Data Sheet for Washing Hair

+ = correct response
P = performance error (incorrect response
0 = order error (incorrect response)

Group ____________
Date ____________

	Students								
	Mary	Jeff	Paula	Mike	Chris	Gary	Judy	Pat	Craig
1. Secure brush, shampoo, creme rinse (girls), towel									
2. Arrange all supplies next to sink									
3. Pick up brush in preferred hand									
4. Brush through hair all around head									
5. Lay brush next to sink									
6. Turn on hot & cold water faucets									
7. Test water temp. (warm) with fingers									
8. Lean head over sink									
9. Spray over entire head with sprayer									
10. Turn off both faucets									
11. While leaning over sink, uncap shampoo									
12. Fill cap with shampoo									

Students

	Mary	Jeff	Paula	Mike	Chris	Gary	Judy	Pat	Craig
13. Pour capful of shampoo into palm of hand									
14. Lay shampoo cap next to bottle									
15. Using both hands, rub shampoo into hair over entire head									
16. Using both hands, work up lather over entire head									
17. Turn on hot & cold water faucets									
18. Test water temp. (warm) with fingers									
19. Lean head over sink									
20. Spray over entire head with sprayer									
21. Rinse out all soap									
22. Turn off hot & cold water faucets									
23. Pick up shampoo cap									
24. Pour capful of shampoo into palm of hand									
25. Put shampoo cap on bottle									

	Students								
	Mary	Jeff	Paula	Mike	Chris	Gary	Judy	Pat	Craig
26. Use both hands, rub shampoo into hair over entire head									
27. Using both hands, work up lather over entire head									
28. Turn on hot & cold water faucets									
29. Test water temp. (warm) with fingers									
30. Lean head over sink									
31. Spray over entire head with sprayer									
32. Rinse out all soap									
33. Turn off hot & cold water faucets									
Girls using creme rinse omit steps 34-36 at this point									
34. Using both hands, squeeze out excess water from hair									
35. Pick up towel									
36. Rub towel over hair to soak up excess moisture									
Follow steps 34-46 for girls using creme rinse									
34a. Uncap creme rinse									
35a. Pour appropriate amt. of creme rinse into palm of hand									

	Students								
	Mary	Jeff	Paula	Mike	Chris	Gary	Judy	Pat	Craig
36a. Using both hands, rub creme rinse into hair over entire head									
37. Put cap on creme rinse									
38. Turn on hot and cold water faucets									
39. Test water temp. (warm) with fingers									
40. Lean head over sink									
41. Spray over entire head with sprayer									
42. Rinse out all creme rinse									
43. Turn off hot and cold water faucets									
44. Using both hands, squeeze out excess water from hair									
45. Pick up towel									
46. Rub towel over hair to soak up excess moisture									

APPENDIX E

Parent Checklist for Washing Hair

Dear Parents:

It is very important that a student can perform the skills learned in "home living skills" class at home. To determine if your child is correctly performing the skill of washing his own hair at home, please fill out the attached sheet as soon as possible and return to me. This will be a great help to me, to your child, and hopefully to you.

I appreciate your cooperation.

Sincerely,

Sue Hamre

Enclosure

Child's Name ______________________

Date Observed ______________________

Name of Person Observing ______________

Instruct your child to "show me how you wash your hair" and be sure he knows where you keep the supplies. Place a ✓in the correct column and make any additional comments that seem necessary; check "yes" if your child can perform the step without any help; check "no" if he needs any help.

Steps	Yes	No	Comments
1. Get out brush, shampoo, creme rinse (girls only) and towel?			
2. Brush through hair around head?			
3. Rinse all hair with (preferably warm) water?			
4. Lather all hair with shampoo?			
5. Rinse out all soap with (preferably warm) water?			
6. Lather all hair again with shampoo?			
7. Rinse out all soap with (preferably warm) water?			
BOY: 8. Towel-dry hair?			
GIRL: 8a. Rub creme rinse all over hair?			
9. Rinse out all creme rinse with (preferably warm) water?			
10. Towel-dry hair?			

Signed ______________________

FIGURE I

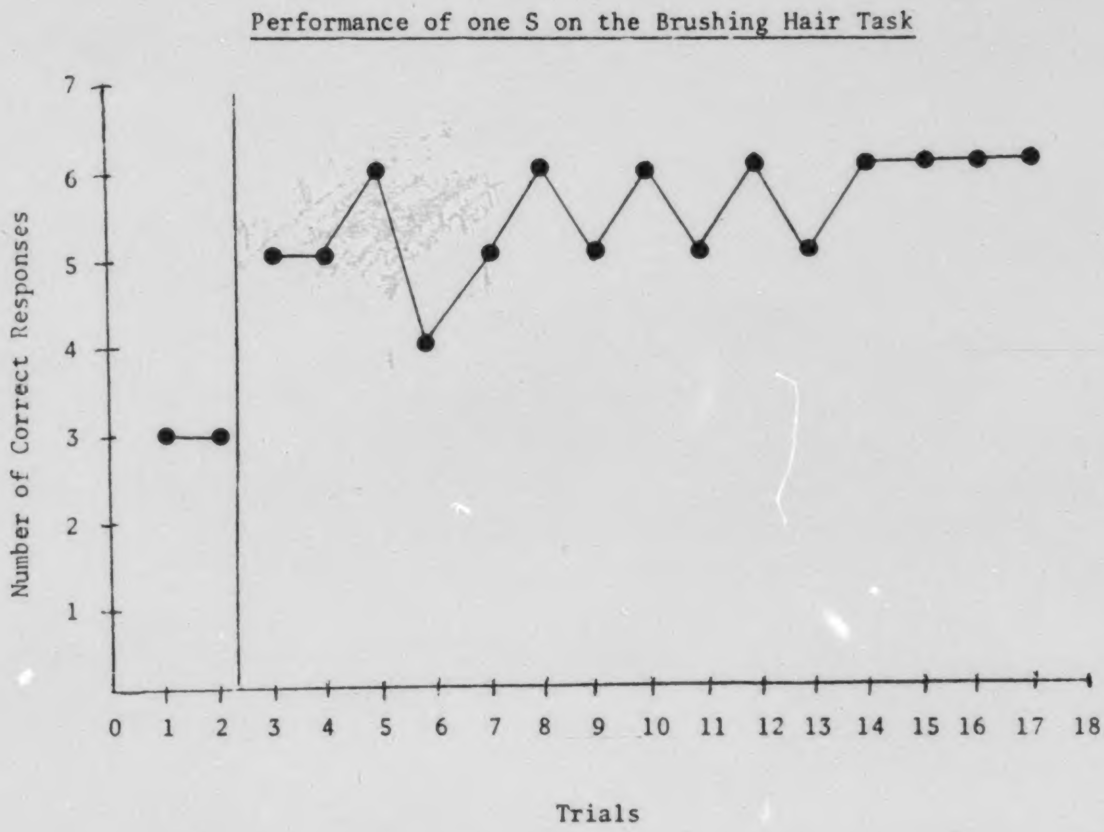
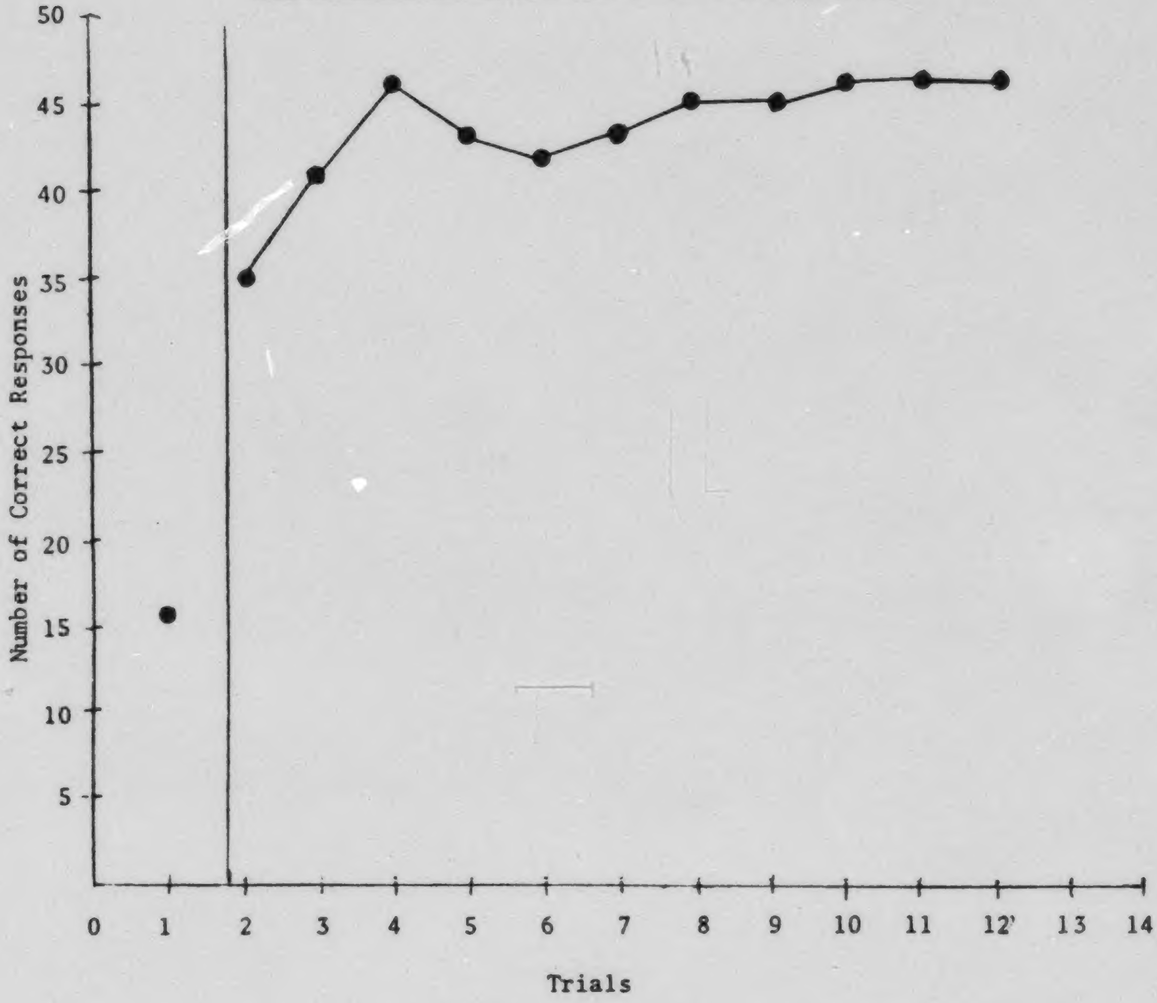

Performance of one S on the Brushing Hair Task
Number of Correct Responses
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Trials

FIGURE II

Performance of one S on the Washing Hair Task



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FAMILY-LIFE CURRICULUM

S. Hamre and W. Williams*

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* These programs have not been implemented due to time restrictions. It is tentatively planned to complete them next semester. Likewise, some of the other programs have not been completed by all students due to lack of time.

I. INTRODUCTION

A. Rationale

The educational goals for students functioning at a severely handicapped level should encompass the teaching of skills which will facilitate their functioning independently in a community setting. There is a vast array of skills which facilitates independent community functioning. This array includes at least: community survival skills; self-care skills; rudimentary language, math and reading; vocational skills; social interaction skills; and family living skills. Although many authors have e poused the importance of teaching severely handicapped students the skills delineated above, a review of literature reveals a paucity of articulated programs. Herein, a family-life curriculum which encompasses bodily distinctions, self-care, family, social interactions and social manners with a sex education emphasis is articulated. This curriculum is in the process of ongoing revision and development based upon student performance data within it.

The implementation of a family-life program arose from immediate problems concerning the students. The students involved in the program were 12-16 years of age. Behavioral observations and reports from parents, teachers, and administrators indicated that the students lacked appropriate social interaction, social manners, self-care and grooming skills. The lack of appropriate skills resulted in the students engaging in inappropriate social and physical interactions with themselves, peers, and adults (e.g., public masturbation, inappropriate touching of others, inappropriate display of underclothing and body parts). The students were also experiencing physical growth related to puberty and often attempted to verbally and/or physically report new and different parts of their bodies, but lacked the appropriate vocabulary. The occurrence of inappropriate behaviors, the lack of appropriate behavioral alternatives, and the lack of vocabulary were the basis for the construction of a "family-life" skills curriculum. It was intended to eliminate some of the problems described by teaching the students appropriate behavioral alternatives.

An essential component of the program was the participation of the students' parents. They provided the educational staff with the support and consent necessary to implement the program and facilitated the transfer of skills taught at school to the home (e.g., self-care).

B. Scope and Sequence

The family-life curriculum was divided into five programmatic areas: bodily distinctions; self-care skills; family; social interactions; and social manners. Each area had its own component programs and hierarchy; however, there were interrelationships between programs. For example, the students had to demonstrate the ability to discriminate selected body parts in the body parts program before they could be taught self-care skills which required discrimination of body parts. Similarly, they will have to learn to discriminate males from females in the sex distinctions program before the social interactions program, which will require differential responding based on sex distinctions can be implemented. The following is a scope and sequence chart of the family-life program. (See chart on following page).

C. Programs to be Devised and Implemented

Due to time restrictions several programs could not be implemented this school year. They were: Sex Distinctions Related to Growth, Family Roles, Social Interactions, and Social Manners. These programs will be implemented in the next school year. Currently the programs are in various stages of development. The Body Distinctions Related to Growth Program is completely written and ready for implementation while the other programs have not been completely conceptualized. The programs as they are currently envisioned will be described in the context of their own program hierarchies.

D. Students and Behavioral Prerequisites

The students this curriculum was developed for ranged in CA from 12 to 16 and MA from 4 to 7. Their expressive language levels ranged from two-word mean utterance length to five-word mean utterance length. The students were all proficient at imitating motor and verbal models.

The curriculum described here is appropriate for students who can imitate motoric models and at least three word utterances. It was our experience that the higher the students' language skills (in terms of mean utterance length), the more rapidly they progressed through the curriculum.

E. General Procedures

Mastery Criterion

A trial may be defined as an arbitrarily determined number of responses. For example, in teaching body parts one could teach the parts in sets of one, two, three, etc. dependent upon the abilities of the student. In this program the student's responses to a complete set was considered a trial. Thus, for a set of one, one response equaled a trial; for a set of two, two responses equaled

Sequence of the Family-Life Curriculum

Order of Program Presentation

Bodily Distinctions

- a) Discrim. and label body parts
- b) Sex distinctions
  With clothes
  Without clothes
- c) Body changes related to growth

Self-Care Skills

- a) Use of mouthwash
- b) Premenstrual training

Family

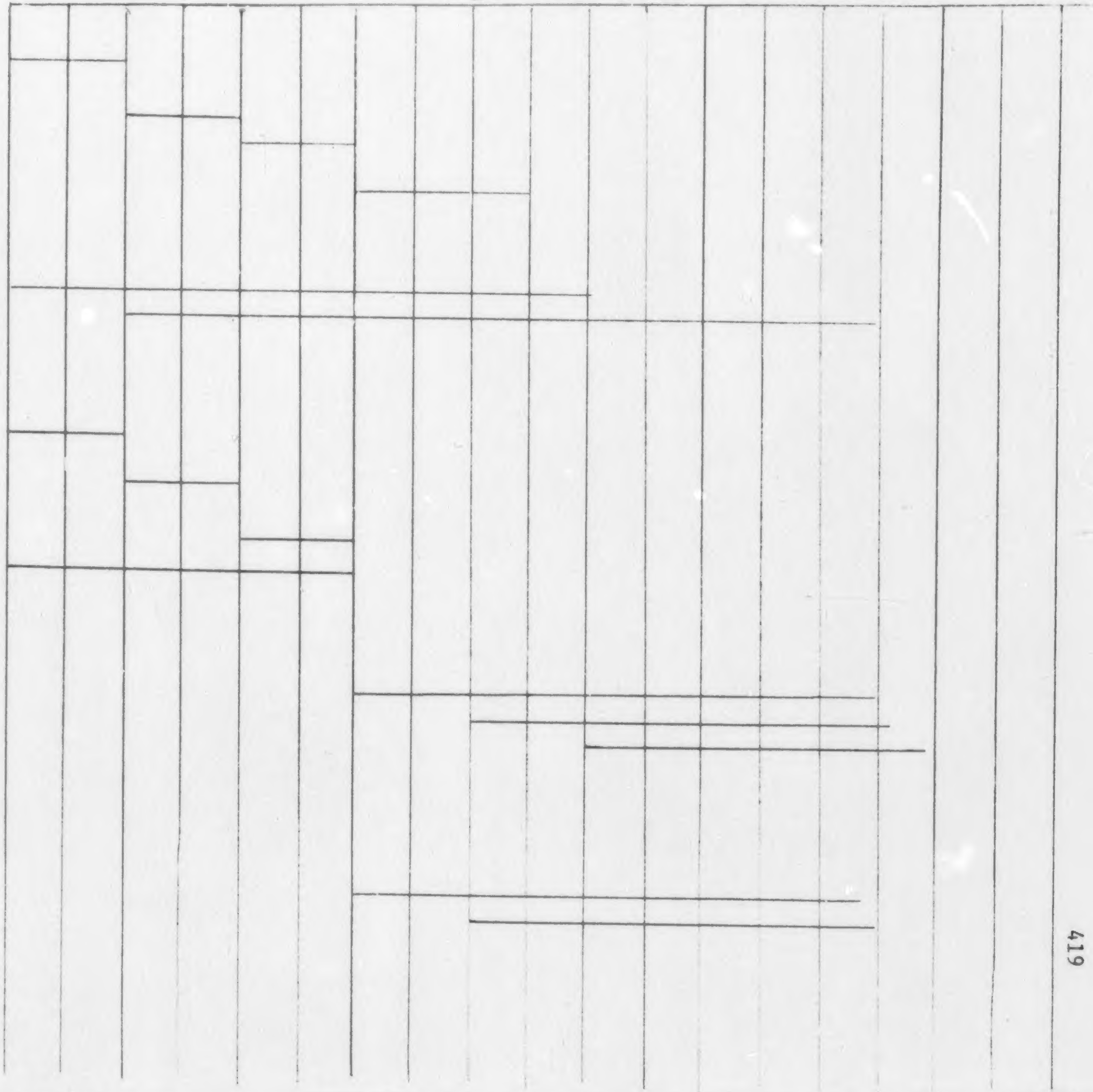
- a) Naming specific family members
- b) Naming specific family relationships
- c) Labeling specific family roles
- d) General family

Social Interactions

- a) In classroom
  - 1) with peers
  - 2) with adults
  - 3) with children
- b) Out of classroom in school

Social Manners

- a) In class
- b) Out of class



a trial; etc. Mastery criterion is the criterion the student has to attain to demonstrate that he has mastered a specified objective and is ready to advance to the next objective. In this curriculum criterion levels were set in terms of both percentages and trials. In such programs as sex distinctions, where the student had to label twenty-seven figures as male or female, the criterion was set at 90% on a trial of 27 possible responses. However, in other programs, such as family members and relationships, where it was essential that the student learn every response, criterion was set at one hundred percent correct responding on a trial. Generally in baseline segments of the program the student had to attain 95-100% correct responding on one trial to advance to the next objective of a program. If the student failed, he was instructed. In instructional sessions the students had to have three consecutive trials of 95-100% correct responding to advance to the next objective of a program. Each instructional session constituted one trial since each student was only given one trial per instructional session. A sample data sheet should help to further clarify the notions of trials and criteria.

Sample Data Sheet*

(See Appendix B for Graph)

Date ________ Behavior Objective Body Parts Set Arm, Stomach, Chest

Name	Trial	Arm	Stomach	Chest	Total Correct
Student #1	1	+	+	- or M	2
	2	+	+	+	3
	3	+	- or M	+	2
	4	+	+	+	3
	5	+	+	+	3
	6	+	+	+	3

(Criterion met: three consecutive correct trials)

* In the data system utilized: + indicates a correct response; - indicates an incorrect response; M indicates a correct response after a model; and P indicates a correct response after a prime.

Teaching and Measurement Procedures

Two basic teaching and measurement designs were utilized: a model-test-teach design and a test-teach design. The model-test-teach design consisted of two segments. In the first segment the teacher modeled the correct responses for the students and had the students practice them. In the second segment, the teacher presented the verbal response cue. If the student responded correctly he was rewarded. If he responded incorrectly, he was taught the correct response through either a modeling procedure (the teacher modeled the response and had the student imitate), or a priming procedure (the teacher physically guided the student through the correct response). For students who initially responded incorrectly, the models or prompts were faded until they could perform the correct response to the teacher's cue. Models were faded by presenting a successively shorter segment of the modeled response. Prompts were faded by gradually lessening the amount of guidance.

In using a model-test-teach design measures should be taken to assess whether the students can perform the behaviors when they are not preceded closely in time by a model. In this program rebaselines, post-tests or measures of generalization were usually administered to assess whether the students could perform the target behaviors given only a cue to respond.

Basic Procedure - Model-Test-Teach

1. Modeling - T (teacher) modeled the correct responses for the Ss (students).

2. Testing and Teaching
   a. T secured the attention (eye contact) of the Ss.
   b. T presented the materials.
   c. T cued the Ss to scan the instructional materials and primed the scanning response if necessary.
   d. T presented the cue to respond.
   e. T evaluated the S's response.
      1) Correct response: T immediately consequated the S's response with verbal praise and a smile and marked the data sheet with a "+." If the student had three consecutive correct trials he/she proceeded on to the next objective.
      2) Incorrect response: T proceeded to Step f.
   f. T secured S's eye contact, presented the cue to respond and provided a model of the correct response.
   g. T secured the S's eye contact and presented the cue to respond.
   h. T evaluated the S's response.
      1) Correct response: T immediately consequated the S's response with verbal praise and a smile and marked the data sheet with a "-" or "M." T eliminated the modeling by gradually reducing the demonstration provided.
      2) Incorrect response: T proceeded to Step i.
   i. T secured the S's eye contact, presented the cue to respond and primed the correct response by physically guiding the S through it. T consequated the response with verbal praise and a smile and marked the data

sheet with a "P." T eliminated the priming by gradually fading the assistance. As the example indicates, data was only taken during the test-teach segment.

Basic Procedure - Test-Teach

The test-teach design consisted of only implementing segment two of the model-test-teach design.

Placing the Student

Utilization of task analysis facilitates individualization of instruction. Utilizing a task analysis model, student mastery of various objectives may be assessed before instruction, and they can be instructed on only those objectives on which they have failed and for which they have mastered the prerequisites. Thus, students can be permitted to proceed through the curriculum at their own pace, taking longer on trouble spots and skipping steps on which they demonstrate mastery.

To determine a student's entering level into the curriculum or program, a baseline measure was devised to assess the student's mastery of a behavioral objective. The test basically consisted of implementing steps "a" through "e" of the basic teaching procedure (without consequating student responses). For example, baseline measure for the body parts behavioral objective consisted of:

a. The teacher secured eye contact to the task for all the students.
b. The teacher pointed to a representational figure.
c. The teacher selected one student and said, "S, look at this," while she pointed to the body part. If S looked, the teacher proceeded to step "d." If S did not look, the teacher repeated the cue and/or physically primed S to look and then proceeded to step "d."
d. The teacher presented the response cue, "What is this, S?"
e. The teacher marked a "+" for a correct response and a "-" for an incorrect response.

A similar measure was devised for each behavioral objective. If the student failed the test and had the requisite behaviors, he was taught the skill; if he passed, he moved on to the next objective. The tests were given in the same easy to hard sequence as depicted in the task hierarchy. Typically, students were only tested on skills for which they had demonstrated the requisite behaviors.

II. PARENTAL INTERACTIONS

An essential component of the family-life curriculum was the participation of the students' parents. Parental interactions provided the educational staff with input on which skills the students possessed and which skills needed to be taught; facilitated the maintenance and generalization of instated behaviors to the home environment (e.g., self-care skills); and provided the necessary support and consent to implement the sex education components of the curriculum. Communication between parents and teachers was conducted through three channels: parent conferences at school; notes between home and school; and telephone conversations.

Initially, the implementation of a family-life curriculum with sex education components was approached with intrepidation on the part of the educational staff. The uneasiness was due primarily to lack of knowledge as to how the parents and community would react. Thus, the first step in program implementation was to solicit the consent and support of the parents. An outline of a potential Family-Life curriculum and a conference report covering topics of concern (See Appendix A) were constructed for the purpose of facilitating discussion of the program at parent-teacher conferences. The parents were then invited to individual parent conferences to discuss the potential curriculum and to fill out the conference reports with the teacher.

The results of the conference reports (Table 1) indicated that most of the parents had not discussed bodily distinctions (including genitals) or sexual intercourse with their children. However, a majority of the parents stated that they had talked to their children about self-care skills, acting like ladies or gentlemen, verbal and physical social contact with others, and family life (sharing, cooperating, etc.). The parents' general concensus was that their children needed instruction on skills delineated on the curriculum outline and a majority of them (4 out of 7) could not think of additional skills. Two of the parents requested that their children be taught the appropriate times and places to masturbate and a third asked that her child be taught appropriate toileting after a bowel movement. Other areas they expressed concern about were the childrens' inappropriate (overfriendly - nondiscriminating) verbal and physical interactions with others, and inappropriate body posture and gestures. The parents were quite supportive of the potential curriculum and all expressed a desire for frequent contacts with the teacher in regard to the progress and programs of their children.

Following the parent conferences, programs were devised and implemented for components of the curriculum outline. Close contact was maintained with the parents through telephone calls, notes, and conferences. As will be described in the program sections, some programs relied on interaction, support and consent from the parent for their success.

TABLE 1

Family-Life Skills Conference Report Results

Number of Parents = 7

Topical Areas	Have Talked to Child About	
	Yes	No
Body parts, with appropriate names for genitals	3	4
Self-care skills (including menstrual hygiene)	7	0
Acting like a lady/ gentleman	7	0
Verbal and physical social contact with others	5	2
Family life	6	1
How babies are made	0	7

III. BODILY DISTINCTIONS

A. Body Parts

The ability to discriminate and label body parts on others and self is a requisite behavior to the sex distinctions, family, body growth, social manners and social interactions programs. That is, labeling selected body parts was a component behavior of each of these programs. This program was divided into four phases: I) teaching discrimination of body parts on others; II) teaching labeling of body parts on others; III) teaching discrimination of body parts on self; and IV) teaching labeling of body parts on self. (The students were taught to discriminate and label body parts on others before themselves because they could see the entire body on others, as opposed to viewing only parts on self.)

Instruction of each phase consisted of two segments: (1) modeling, and (2) tests and instruction. In the modeling segment the teacher modeled the correct responses and had the students imitate. This was followed by a segment that consisted of individual tests and instruction. Data was only taken on the test and instruction segment. The criterion on baselines was at least 95% correct on all body parts and the criterion for instructional sets was three consecutive correct trials.

Discrimination and labeling of the body parts head, hair, eye, nose, mouth, ear, neck, shoulder, back, arm, elbow, wrist, hand, finger, chest, stomach, leg, knee, ankle, foot and toe were taught on the teacher, self, and unclothed representational figures in the classroom; navel was taught only on the representational figures. For some students the list of parts were broken into sets of 1-7 to facilitate learning. Discrimination and labeling of what will be referred to as genital parts (i.e., breast [for women], nipple, penis, pubic hair, vagina, crotch, buttocks) were only taught on unclothed representational figures in the classroom. Generalization of labeling genital body parts to unclothed others of the same sex and self was tested in a shower room. Parental consent and support was attained before generalization measures were taken.

The instructional sequence was as follows:

1. Baseline the terminal objectives of Phases I-IV
2. Teach Phase I (only parts missed in baseline)
3. Rebaseline Phase II
4. Teach Phase II (only parts missed in Rebaseline)
5. Rebaseline Phase II (all body parts)
6. Teach Phase III (only parts missed in Baseline)
7. Rebaseline Phase IV
8. Teach Phase IV (only parts missed in Rebaseline)

9. Rebaseline Phase IV (all body parts)
10. Generalization measure of labeling selected body parts on others and self

The instructional sequence involved baselining the objectives of Phases I-IV. Next, the body parts which each student missed on the baseline of each phase were delineated. During instruction on each phase, the student was taught only the body parts he had missed in the baseline (or rebaseline) of that phase. Upon reaching criterion on a phase, a rebaseline of the next phase in the sequence was administered before the phase was taught. This rebaseline served two purposes: 1) it allowed the teacher to evaluate the students' knowledge of the phase to be taught; and 2) it assessed transfer of learning. Subsequent to teaching labeling body parts on others (Phase II) and labeling body parts on self (Phase IV), rebaseline of labeling all body parts on others or self was administered. This rebaseline served as a post-test of the student's ability to label all body parts and assessed the student's ability to label body parts when the responses had not been preceded closely in time by a model.

Task Analysis

Purpose:

1. Recognition (nonverbal, verbal) of body parts on others
2. Recognition (nonverbal, verbal) of body parts on self
3. Preparation for labeling sex distinctions between man-woman, boy-girl
4. Preparation for labeling bodily changes related to growth

Materials:

1. Life-size representation of unclothed adult male, with front and back views
2. Life-size representation of unclothed adult female, with front and back views
3. Pointer
4. Data sheets (See Appendix B)
5. Individual graphs

Vocabulary:

Body parts - "head, hair, eye, nose, mouth, ear, neck, shoulder, back, arm, elbow, wrist, hand, finger, chest, breast, nipple, stomach, pubic hair, navel, penis, vagina, crotch, butt(ocks), leg, knee, ankle, foot, toe."

Objectives:*

Phase I: When T asks, "Where is my (his/her on the representational figure) (selected body part), S?", S will point to the body parts with at least 95% accuracy on two consecutive trials.

Phase II: When T points to selected body parts on others or representational figures and asks, "What is this, S?", S will verbally state the correct names for the parts with at least 95% accuracy on two consecutive trials.

Phase III: When T asks, "Where is your (selected body part), S?", S will point to the body parts with at least 95% accuracy on two consecutive trials.

Phase IV: When T points to selected body parts on S and asks, "What is this, S?", S will verbally state the correct names for the parts with at least 95% accuracy on two consecutive trials.

Teaching Procedure

Baselines: Phases I-IV were baselined before instruction commenced.

Phase I: T asks, "Where is my (his/her on a representational figure) (body part), S?" T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

It should be noted that navel and the genitals (breast, nipple, penis, pubic hair, vagina, crotch, butt(ocks)) were only taught and baselined with the use of representational figures.

Phase II: T points to a specific body part on herself or on representational figures when appropriate and asks, "What is this, S?" T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

Phase III: T asks "Where is your (body part), S?" T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet. Discriminating and labeling navel and the genitals (listed under Phase I) were not taught nor baselined in Phases III and IV.

Phase IV: T points to a specific body part on S and asks, "What is this, S?" T says "Thank you" regardless of the response and records the response as a "+" or "-" on the data sheet.

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* All pointing to body parts by T and S was done with a pointer.

Phase I: Teaching Discrimination of Body Parts on Others

Teaching Steps: (navel and the genitals were only taught on representational figures)

1. Modeling: T points to body part on herself or representational figures (starting with head and moving downward toward toes) and says, "This is my (his/her) (body part)"; "Where is my (his/her) (body part), S?"
    a. Correct response - verbal praise from T.
    b. Incorrect response - T says, "No, S, this is my (his/her) (body part)," and physically primes the correct response.

2. Testing and Instruction: Immediately subsequent to each modeling segment the Ss were tested. T points to body parts on herself or representational figures and asks, "Where is my (body part), S?"
    a. Correct response - verbal praise from T.
    b. Incorrect response - T points to the body part and says, "No, S, this is my (body part)," "Where is my (body part), S?"
        1) Correct response - T says, "That's better."
        2) Incorrect response - T says, "No, S, this is my (body part)," and physically primes the correct response.

3. Criterion: Follow the above procedure until S correctly discriminates each selected body part on at least three consecutive trials on a set.

Phase II: Teaching Labeling of Body Parts on Others

Rebaseline: T points to specific body part on herself or on representational figures when appropriate and asks, "What is this, S?" T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

Teaching Steps: (navel and the genitals were only taught on representational figures)

1. Modeling: T points to body part on herself or representational figures and says, "This is my (his/her) (body part)"; "What is this, S?"
    a. Correct response - verbal praise from T.
    b. Incorrect response - T points to body part and says, "No, S, this is my (his/her) (body part)"; "What is this, S?"
        1) Correct response - T says, "That's better."

        2) Incorrect response - T models the correct response until S imitates it.

2. Testing and Instruction: Immediately subsequent to each modeling segment the Ss were tested. T points to body part on herself or representational figures and asks, "What is this, S?"
    a. Correct response - verbal praise from T.
    b. Incorrect response - T points to body part and says, "No, S, this is my (his/her) (body part)"; "What is this, S?"
        1) Correct response - T says, "That's better."
        2) Incorrect response - T models the correct response until S imitates it.

3. Criterion: Follow the above procedure until S correctly labels each set of body parts on at least three consecutive trials.

Phase III: Teaching Discrimination of Body Parts on Self

Rebaseline: T asks, "Where is your (body part), S?" T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

Teaching Steps: (navel and the genitals were not taught)

1. Modeling: T points to body part on student (starting with head and moving downward towards toes) and says, "This is your (body part)"; "Where is your (body part), S?"
    a. Correct response - verbal praise from T.
    b. Incorrect response - T says, "No, S, this is your (body part)" and physically primes the correct response.

2. Testing and Instruction: Immediately following each modeling segment the Ss were tested. T points to body part on S and asks "Where is your (body part), S?"
    a. Correct response - verbal praise from T.
    b. Incorrect response - T points to the body part and says, "No, S, this is your (body part)." "Where is your (body part), S?"
        1) Correct response - T says, "That's better."
        2) Incorrect response - T says, "No, S, this is your (body part)" and physically primes the correct response.

3. Criterion: Follow the above procedure until S correctly discriminates each set of body parts on at least three consecutive trials.

Phase IV: Teaching Labeling of Body Parts on Self

Rebaseline: T points to specific body part on S and asks, "What is this, S?" T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

Teaching Steps: (navel and the genitals were not taught)

1. Modeling: T points to body part on S and says, "This is your (body part)"; "What is this, S?"
   - a. Correct response - verbal praise from T.
   - b. Incorrect response - T points to body part and says, "No, S, this is your (body part)"; "What is this, S?"
     - 1) Correct response - T says, "That's better."
     - 2) Incorrect response - T models the correct response until S imitates it.
2. Testing and Instruction: Immediately following each modeling segment the Ss were tested. T points to body part on S and asks, "What is this, S?"
   - a. Correct response - verbal praise from T.
   - b. Incorrect response - T points to body part and says, "No, S, this is your (body part)"; "What is this, S?"
     - 1) Correct response - T says, "That's better."
     - 2) Incorrect response - T models the correct response until S imitates it.
3. Criterion: Follow the above procedure until S correctly labels each body part on at least three consecutive trials on a set.

Generalization measures of labeling selected body parts (genitals) on others and self:

Generalization measures were taken in a shower (dressing) room setting; both S and T were without clothing (female S with female T, male S with male T).

A. Generalization of labeling body parts (genitals) on others
   1. T points to specific body parts on herself and asks, "What is this, S?"
      - a. T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

B. Generalization of labeling body parts (genitals) on self
   1. T points to specific body parts on S and asks, "What is this, S?"

Table 2

Body Parts

Stu-dents	Baselines Phases				Phase I	Phase II			Phase III		Phase IV		Generaliza-tion to self and others
	I	II	III	IV	Trials to Cri-terion	Re-base-line	Trials to Cri-terion	Post Test	Re-base-line	Trials to Cri-terion	Re-base-line	Trials to Cri-terion	
S_1	76%	66%	85%	100%	11	93%	4	100%	100%	0	100%	0	
S_2	80%	76%	95%	100%	4	100%	0	100%	100%	0	100%	0	
S_3	69%	62%	69%	85%	8	72%	27+						
S_4	82%	72%	95%	100%	3	100%	0	100%	100%	0	100%	0	100%
S_5	69%	62%	95%	85%	20	97%	4	100%	90%				
S_6	76%	76%	100%	100%	8	97%	3	100%	100%	0	100%	0	
S_7	82%	76%	100%	100%	3	100%	0	100%	100%	0	100%	0	100%

Comparison

Phase II

	Baseline	Rebaseline
S_1	66%	93%
S_2	76%	100%
S_3	62%	72%
S_4	72%	100%
S_5	62%	97%
S_6	76%	97%
S_7	76%	100%

a. T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

Results and Discussion:

The results of the baseline measures (See Table 2) indicated that the students were more proficient at discriminating and labeling body parts on themselves (Phase III and IV) than on others (Phase I and II). This resulted primarily from the fact that navel, breast, nipple, penis, pubic hair, vagina, crotch, and butt(ocks), were baselined for Phases I and II but not baselined for Phases III and IV. These were the parts the students missed on Phases I and II baselines.

It is of interest that subsequent to teaching discrimination of body parts on others in Phase I the rebaseline of Phase II (Comparison A) indicated a dramatic improvement in all the students' abilities to label body parts on others. This phenomena indicates generalization from receptive to expressive language.

Post-test measures of Phase II and IV (labeling body parts on others and self) and the test of generalization to labeling genitals on unclothed self and others, (the parts only taught on representational figures in Phases I and II) indicated that the students' abilities to label body parts on others and self was enduring and that labeling of genitals on representational figure generalized to unclothed self, others and a new situation (shower room). Not all the students progressed through the program at the same rate. In fact, some students (S_3 and S_5) have not completed the program. It appeared that students with higher level language skills in terms of mean utterance length and size of vocabulary progressed through the curriculum with the most rapidity. (See Table 2 on following page)

B. Sex Distinctions--Man-Woman, Boy-Girl With Clothing

The purpose of this component of the Family-Life curriculum was to assess the students' abilities to discriminate the sex of clothed unfamiliar people, classmates, teachers and family. Apparel features upon which the child could make sex distinctions were delineated (See list, Appendix C). Twenty-seven pictures of unfamiliar people which depicted various combinations of these variables were selected for testing purposes. Pictures of family members were obtained from the students' parents. The students' abilities to discriminate the sex of clothed classmates and teachers were tested on actual people. The basic procedure consisted of obtaining baseline measures of the behavioral objectives and then administering informal instruction to any student who failed to meet criterion. Criterion was 82% to 90% correct on each category of people tested.

Task Analysis

Behavioral Prerequisites: Discriminating and labeling body parts

Purpose:

1. Labeling the sex of man-woman and boy-girl
2. Preparation for body changes related to growth

Materials:

1. Twenty-seven pictures of unfamiliar people wearing distinctive apparel (See list of distinctive apparel variables, Appendix C)
2. Pictures of the students' families
3. Data sheet (See Appendix B)

Objectives:

Unfamiliar People: When presented with each of twenty-seven pictures of unfamiliar people wearing distinctive apparel (See Appendix C) and asked, "Tell me if this is a (man or a woman/boy or a girl), S" the student will be able to correctly label the sex of 90% of the pictures.

Classmates: When presented with each of his/her six classmates and asked, "Tell me if this is a man or woman, S," the student will be able to correctly label the sex of 82% (5 out of 6) of his classmates.

Teachers: When presented with six teachers (3 male and 3 female) and asked, "Tell me if this is a man or woman, S," the student will be able to correctly label the sex of 82% (5 out of 6) of his teachers.

Family: When presented with pictures of his/her family members (number varies) and asked, "Tell me if this is a man or woman/bor or a girl, S," the student will be able to correctly label the sex of 90% of his family.

Baselines:

The baseline of the four objectives were identical to its objective as stated above with the teacher recording correct and incorrect responses.

Results and Discussion:

All of the Ss who were tested, except S_4, met criterion during the baseline measures (Table 3). S_1, S_5 and S_6 were not tested on unfamiliar people. Informal instruction for S_4 was carried out following the model-test-teach design. (See Table 3 on following page)

C. Sex Distinctions--Man-Woman, Boy-Girl Without Clothing

The purpose of this program was to teach the students to discriminate and label sex distinctions (body parts from which sex can be determined) on unclothed men and women and unclothed boys and girls. In that discrimination and labeling of body parts is requisite to sex distinctions, this program was implemented subsequent to a student's completion of the body parts program.

Instruction consisted of two segments: modeling, and test and instructions. In the modeling segment the teacher modeled the correct responses. This was followed by a segment that consisted of individual testing and instruction. Data was only taken during the testing and instruction segment. Criterion was three consecutive correct trials.

The instructional sequence was as follows:

1. Baseline terminal objective
2. Teach sex distinctions on unclothed representational figures
3. Test and if necessary teach generalization of sex distinctions on unclothed others and self

The instructional sequence consisted of baselining the students' abilities to discriminate and label sex distinctions on representational figures of unclothed men and women, boys and girls. Those students who failed to meet criteria in the baseline measures were instructed on representational figures. When the students met criterion on sex distinctions on unclothed representational figures, generalization of sex distinctions (discriminating and labeling the distinction) was tested on unclothed others of the same sex and self. The generalization phase was conducted in a shower room setting (male S with male T; female S with female T). This measure assessed the student's ability to make sex distinctions in a different situation and to make them when not preceded closely in time by a model. Prior to the implementation of the generalization phase, parental support and consent were obtained.

Task Analysis

Behavioral Prerequisite: Discriminating and labeling body parts

Purpose:

1. Visual discrimination of bodily distinctions between man and woman, boy and girl

Table 3

Sex Distinctions with Clothing

		General Ability		
Number of test Items	Unfamiliar 27	Classmates 6	Teachers 6	Family Varied
Students				
S_1*		100%	82%	100%
S_2	96%	100%	100%	100%
S_3*				
S_4	84%	50%	67%	33%
S_5*		100%	100%	100%
S_6*		100%	100%	100%
S_7	100%	100%	100%	100%

* $\underline{S}_3$ was not far enough advanced in other programs to be included in this one. $\underline{S}_1$, $\underline{S}_5$, and $\underline{S}_6$ have not tested on unfamiliar people yet.

2. Verbal identification of bodily distinctions between man and woman, boy and girl
3. Extension of "Body Parts" program
4. Preparation for body changes related to growth program

Materials:

1. Life-size representational unclothed figures of adult man and woman
2. Life-size representational unclothed figures of young boy and girl
3. Pointer
4. Data sheets (See Appendix B)
5. Individual graphs

Vocabulary:

1. "man"
2. "woman"
3. "boy"
4. "girl"
5. "penis"
6. "vagina"
7. "breasts"

Objective:*

In the presence of an unclothed representational figure of a man, woman, boy or girl (presented individually), T says, "Tell me if this is a (man or a woman/boy or a girl), S," S will correctly respond, "(man/woman/boy/girl)." Immediately following the above correct response, when asked, "How can you tell this is a (man/woman/boy/girl); tell me one (two, for woman) way(s), S," S will verbally state the correct distinction(s) - penis (man, boy), vagina and breasts (woman), vagina (girl). S will respond correctly to both response cues on three consecutive trials.

Teaching Procedure

Baseline:

1. In the presence of an unclothed representational figure of a man, woman, boy, or girl (presented individually), T says, "Tell me if this is a (man or a woman/boy or a girl), S." T says "Thank you" regardless of S's response and records the response as "+" or "-" on the data sheet.

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* All pointing to body parts by T or S was done with a pointer.

2. Immediately following "1" T says, "How can you tell this is a (man/woman/boy/girl)? Tell me one way (two ways for woman), S." T says "Thank you" regardless of S's response and records the response as "+" or "-" on the data sheet. This procedure is followed for each of the sex distinctions (man-woman, boy-girl). (Man and woman may be taught separately from boy and girl.)

Teaching Steps:

1. Modeling: In the presence of representational figures of a man, woman, boy and girl (four figures presented together), T points to the appropriate body parts and says, "This is a (man/woman/boy/girl). You can tell (he/she) is a (man/woman/boy/girl) because (he/she) has a (penis/vagina/vagina and breasts)." This procedure is followed across the four figures.

2. Testing and Teaching: Immediately subsequent to each modeling session the following testing and teaching procedures were implemented.
   a. In the presence of representational figures of a man, woman, boy, or girl (presented individually), T says, "Tell me if this is a (man or a woman/boy or a girl), S."
      1) Correct response - verbal praise from T and T proceeds to "b."
      2) Incorrect response - T points to the appropriate figure and says, "No, S, this is a (man/woman/boy/girl). What is this?" T repeats the model until S imitates the correct response. T then proceeds to "b."
   b. Immediately following step "a," T says, "How can you tell this is a (man/woman/boy/girl)? Tell me one way (two ways for woman), S."
      1) Correct response(s) - verbal praise from T
      2) Incorrect response(s) - T points to the appropriate body part(s) and says, "No, S, you can tell (he/she) is a (man/woman/boy/girl) because (he/she) has a (penis/vagina/vagina and breasts)." T repeats the model until S imitates the correct response.

3. Criterion: Follow the above procedure until S has three consecutive correct trials.

Generalization of sex distinctions to unclothed other and self:

Generalization measures and instruction were implemented in a shower (dressing) room. Both S and T were without clothing (female S with female T and male S with male T).

1. Generalization of sex distinctions to others
   a. T says, "Tell me if I am a man or a woman, S."
      1) Correct response - verbal praise from T and proceeds to "b."
      2) Incorrect response - T says, "No, S, I am a (man/woman)." T repeats the model until S imitates the correct response and then goes to "b."
   b. Immediately following step a, T says, "How can you tell I am a (man/woman)? Tell me one (two, for woman) way(s), S."
      1) Correct response - verbal praise from T
      2) Incorrect response(s) - T says, "No, S, you can tell I am a (man/woman) because I have a (penis/vagina and breasts)." T repeats the model until S imitates the correct response.

2. Generalization of sex distinctions to self
   a. T says, "Tell me if you are a (man or a woman/boy or a girl), S." (Use boy or girl when teaching young students.)
      1) Correct response - verbal praise from T and proceeds to "b."
      2) Incorrect response - T says, "No, S, you are a (man/woman)." T repeats the model until S imitates the correct response and then proceeds to "b."
   b. Immediately following step "a," T says, "How can you tell you are a (man/woman)? Tell me one way (two ways for woman), S."
      1) Correct response - verbal praise from T.
      2) Incorrect response(s) - T says, "No, S, you can tell you are a (man/woman) because you have a (penis/vagina/vagina and breasts)." T repeats the model until S imitates the correct response.

Results and Discussion:

The baseline data indicated (Table 4) that the three students in the program (S_2, S_4, and S_7) could not discriminate and tell how they made sex distinctions on unclothed representational figures. (The students had to both make the distinction and tell how they made it for the trial to be counted as correct.) All three students demonstrated rapid mastery of the objective. The generalization measure to unclothed self and others in the shower room indicated some generalization. Generalization measures on S_2 were omitted by parental request.

The success of the students on baseline measures and the rapid acquisition of the behavior (3 trials to criterion) may be due in part to the previous training they received on discriminating and labeling body parts in the body parts program. (See Table 4 on following page)

Table 4

Sex Distinctions without Clothing

Students*	Baseline Unclothed Representational Figures	Trials to Criterion	Generalization to Unclothed Others and Self
S_1			
S_2	89%	3	
S_3			
S_4	44%	3	82%
S_5			
S_6			
S_7	66%	3	100%

* S_1, S_3, S_5 and S_6 were not far enough advanced in other programs to be included in this one.

D. Body Changes Related to Growth--Man-Boy, Woman-Girl

(to be implemented)

The objective of this program is to teach the students to discriminate and express how they discriminate men from boys and women from girls on unclothed and clothed figures. The purpose of the unclothed portion of the program is to teach the students to recognize and be able to express their own body growth, as related to puberty. The purpose of the clothed portion is to teach the students to make sex and age discriminations which will be utilized in the social interactions program. That is, in the social interactions program they will have to make differential social responses to males and females, adults and children. Thus far, only the unclothed portion of the program has been tentatively designed.

On unclothed figures the students will be taught to use underarm hair, hair on arms, penis size, leg hair and chest hair (optional) to discriminate men from boys and to use breast size, hair on arms, pubic hair, underarm hair (optional) and leg hair (optional) to discriminate women from girls. Features labeled "optional" are those which are not always useful in making the discrimination, thus the students will be taught to make the discrimination on figures with and without these features. Detachable optional features have been made and throughout the program the features will be intermittently attached in the various possible combinations. The height of the figures will be controlled such that the student will have to use body features to make age discriminations.

The program has been divided in three phases: I) teaching Ss to express how they discriminate unclothed men from boys; II) teaching Ss to express how they discriminate unclothed women from girls; and III) teaching Ss to express how they discriminate unclothed men, boys, women and girls by sex and physical maturity.

Instruction of each phase will consist of a modeling segment (the teacher will model the correct responses) followed by an individual test and instructional segment. The mastery criterion for each part will be three consecutive correct trials.

The instructional sequence will be as follows:

1. Baseline the terminal objective of Phases I-III
2. Teach Phase I (only parts missed in baseline)
3. Post-test Phase I (all parts)
4. Rebaseline Phase II
5. Teach Phase II (only parts missed in rebaseline)
6. Post-test Phase II (all parts)
7. Rebaseline Phase III
8. Teach Phase III (only parts missed in rebaseline)
9. Post-test Phase III (all parts)

The instructional procedure will involve first baselining the objective of each phase. The students will then be instructed on the phases they failed. Upon reaching criterion on a phase (I, II) a rebaseline of the next phase will be administered before it is taught. This rebaseline will serve two purposes: 1) it will allow the teacher to measure the students' knowledge of the phase to be taught; and 2) it will afford an analysis of generalization or transfer of learning from one phase to another.

Task Analysis

Behavioral Prerequisites: Body parts, sex distinctions with and without clothing

Purpose:

1. Visual discrimination of bodily distinctions between man and boy, woman and girl
2. Verbal identification of bodily distinctions between man and boy, woman and girl
3. Visual discrimination of self-growth
4. Verbal identification of self-growth
5. Extension of "Sex Distinctions" program
6. Preparation for discrimination between children and adults in "Social Interactions"

Materials:

1. Life-size unclothed representational figures of short man and woman
2. Life-size unclothed representational figures of tall boy and girl
3. Detachable representational body parts for man:
    a. chest without hair
4. Detachable representational body parts for woman:
    a. underarm areas without underarm hair
    b. legs with leg hair
    c. chest with small breasts (optional)
5. Pointer
6. Data sheets (See Appendix B)
7. Graphs

Vocabulary: (It may be necessary to pre-teach some of the vocabulary.)

1. "man"
2. "boy"
3. "woman"
4. "girl"
5. "grown up"
6. "not grown up"

7. "big (bigger)"
8. "little (small, smaller)"
9. "penis"
10. "pubic hair"
11. "underarm hair (hair under arms)"
12. "hair on arms"
13. "leg hair (hair on legs)"
14. "breasts"
15. "chest hair (hair on chest)"

Objectives:*

Phase I, Labeling on Man-Boy: In the presence of unclothed representational figures (on short adult and tall child figures, so that height is not a relevant feature) of a man and boy presented individually, T asks, "Is this a man or a boy?" "Is he grown up or not grown up?" "How can you tell he is (grown up/not grown up)?" "Show me and tell me 5 ways (6, when chest hair is included on man)." S will respond correctly to each cue to respond on three consecutive trials. On the boy S should point to where the features would be.

Correct Responses:

Men	Boys
underarm hair	no underarm hair
hair on arms	no hair on arms
bigger penis	smaller penis
pubic hair	no pubic hair
leg hair	no leg hair
chest hair (optional)	no chest hair

Phase II, Labeling on Woman-Girl: In the presence of unclothed representational figures (on short adult and tall child figures, so that height is not a relevant feature) of a woman and a girl presented individually, T asks, "Is this a woman or a girl?" "Is she grown up or not grown up?" "How can you tell she is (grown up/not grown up)?" "Show me and tell me 3 (5, when underarm hair and leg hair are included on woman) ways." S will respond correctly to each response cue on three consecutive trials. On the girl, S should point to where the feature should be.

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* All pointing to body parts by T and S will be done with a pointer.

Correct Responses:

Women	Girls
bigger breasts	no breasts
hair on arms	no hair on arms
pubic hair	no pubic hair
underarm hair (optional)	no underarm hair
leg hair (optional)	no leg hair

Phase III, Labeling on man, boy, woman, girl: In the presence of unclothed representational figures (on short adult and tall child figures so that height is not a relevant feagure) of a man, boy, woman, and girl presented individually, T asks, "Is this a man, boy, woman or girl?" "Is (he/she) grown up or not grown up?" "How can you tell (he/she) is (grown up/not grown up)?" "Show me and tell me 5 ways (6, when the chest hair is included on the man)/ 3 (5 when underarm hair and leg hair are included on woman)." S will respond correctly to each response cue on three consecutive trials. On the boy/girl S must point to where the feature would be.

Teaching Procedures

Baseline: Phases I-III will be baselined before instruction commences.

Phase I: In the presence of unclothed representational figure (on short adult and tall child figures, so height is not a relevant feature) of a man and boy presented individually, T asks, "Is this a man or a boy? Is he grown up or not grown up? How can you tell he is (grown up/not grown up)?" Show me and tell me __ ways (number of ways is determined by the number of optional features used), S." T says "Thank you" regardless of the response and records each response as "+" or "-" on the data sheet.

Phase II: In the presence of unclothed representational figure (on short adult and tall child figures, so height is not a relevant feature) of a woman and a girl presented individually, T asks, "Is this a woman or a girl? Is she grown up or not grown up? How can you tell she is (grown up/not grown up)? Show me and tell me __ ways (number of ways is determined by the number of optional features), S." T says "Thank you" regardless of the response and records each response as "+" or "-" on the data sheet.

Phase III: In the presence of representational figures (on short adult and tall child figures, so height is not a relevant feature) of man, boy, woman and girl presented individually, T asks, "Is this a man, boy, woman, or girl? Is (he/she) grown up or not grown up? How can you tell that (he/she) is (grown up/not grown up)? Show me and tell me __ ways (number of ways is determined by the number of optional features), S." T says "Thank you" regardless of the response and records each response as "+" or "-" on the data sheet.

Teaching Steps:

Phase I: Teaching Ss to Express How They Discriminate Unclothed Men From Boys

1. Modeling: In the presence of representational figures of the man and boy (presented together), T points to the appropriate figure and says, "This is a (man/boy). He is (grown up/not grown up). You can tell he is (grown up/not grown up) because he has (see listed features).

2. Testing and Instruction: Immediately subsequent to each modeling session, the following testing and instruction procedure was implemented.
   a. In the presence of representational figures of a man and boy (presented individually), T asks: "Is this a man or a boy?"
      1) Correct response - verbal praise from T and T proceeds to "b."
      2) Incorrect response - T points to the figure and says, "No, S, this is a (man/boy)." T repeats the model until S imitates the correct response, then proceeds to "b."
   b. Immediately following "a" T asks, "Is he grown up or not grown up?"
      1) Correct response - verbal praise from T and T proceeds to "c."
      2) Incorrect response - T points to the figure and says, "No, S, he is (grown up/not grown up)." T repeats the model until S imitates the correct response and then proceeds to "c."
   c. Immediately following "b" T asks, "How can you tell he is (grown up/not grown up)? Show me and tell me __ ways (number of ways depends on the optional features used), S."
      1) Correct response(s) - verbal praise from T.
      2) Incorrect response (omission) - T points to the figure and says, "You can tell he is grown up/not grown up because he has a _____." T repeats the verbal cue and correction procedure until S gives the correct response.

3) Incorrect response (addition or substitution) - T says, "No, S, not _______," and instructs S to continue pointing if necessary. T repeats the verbal cue and correction procedure until S gives the correct response.

3. Criterion: Follow the above procedures until S correctly responds to all cues on at least three consecutive trials.

Phase II: Teaching Ss to Express How They Discriminate Unclothed Women from Girls

1. Rebaseline Phase II

2. Teach Phase II (follow the same procedure as in Phase I - 1.

3. Test and instruct Phase II (follow the same procedure as in Phase I - 2. to criterion.

Phase III: Teaching Ss to Express How They Discriminate Unclothed Men, Boys, Women, and Girls by Sex and Physical Maturity

1. Rebaseline Phase III

2. Teach Phase III (follow same procedure as in Phase I - 1.

3. Test and teach Phase III (follow the same procedure as in Phase I - 2. to criterion.

IV. SELF-CARE SKILLS

A. Overview

An essential component of a family life program is teaching students skills which will facilitate their sharing in family activities. These skills encompass basic grooming, dressing, domestic maintenance and cooking skills (See Appendix D for an ongoing listing of the domestic and cooking skills and Appendix A for grooming and dressing skills). Herein, use of mouthwash and pre-menstrual training are presented to illustrate programs from this component of the curriculum (See Hamre, 1974, for more detailed program analysis and description).

The parents were important adjuncts to the self-care program in that the teacher had frequent contact with the parents to inform them of what skills the students were acquiring and how to enhance the generalization of the skills to the home. For example, in the pre-menstrual training program the parents were consulted on what type of sanitary equipment they wanted their daughter to utilize. Then, as the students mastered the use of sanitary equipment skill in school, the parents were given information that would enhance generalization of the skill to the home.

B. Use of Mouthwash

Rosanne Nietupski

Teaching the students to use mouthwash was an adjunct to a toothbrushing program. There is no need to articulate to the reader the advantages of fresh smelling breath. Instructing the student in the use of mouthwash involved breaking the skill into seven component parts and then teaching the students to perform the components correctly and in sequence. The student was asked to rinse his mouth. If he performed any component incorrectly or out of sequence, he was immediately stopped at that point in the chain, taught the correct component and/or sequence, and then asked to go on. The student's completion of all the responses in the chain constituted a trial. Each component in the sequence was counted as a correct or error response. However, a trial was only counted as correct if the student performed all seven responses correctly and in sequence. The objective of the program was for the student to perform all seven components correctly and in sequence on three consecutive trials.

The instructional procedure involved first baselining the terminal objective. Students who failed to meet criterion on the terminal objective were instructed. Instruction consisted of a modeling segment (the teacher modeled the correct response sequence for each student) followed by an individual test and instruction segment. Data was only recorded on the test and instruction segment.

Task Analysis

Purpose:

1. Appropriate use of mouthwash to rinse out mouth
2. Extension of "Brushing Teeth" program

Materials:

1. Large plastic bottle of mouthwash (diluted with water)
2. Cup for each S
3. Bathroom-type sink
4. Data sheets (See Appendix B)

Vocabulary:

1. "Mouthwash"
2. "Cup"
3. "Take the cap off the bottle." (Verbal cue used in modeling and/or correcting Step 1)
4. "Pour that mouthwash into the cap until it is full." (Verbal cue, Step 2)
5. "Pour that mouthwash into your cup." (Verbal cue, Step 3)
6. "Put the cap back on the bottle." (Verbal cue, Step 4)
7. "Put that mouthwash into your mouth." (Verbal cue, Step 5)
8. "Swish it around." (Verbal cue, Step 6)
9. "Spit it out." (Verbal cue, Step 7)

Objective:

Given the response cue, "Show me how you rinse your mouth using these supplies, please." (A cup and a bottle of mouthwash were placed in front of S.), S will correctly: 1) take the cap off the bottle, 2) pour the mouthwash into the cap, 3) pour the mouthwash into the cup, 4) put the cap back on the bottle, 5) pour the mouthwash from the cup into his mouth, 6) swish it around in his mouth, and 7) spit it out into the sink, correctly and in sequence on three consecutive trials.

Teaching Procedure

Baseline:

S stands in front of the sink. A cup and bottle of mouthwash are placed in front of him/her. T says, "Show me how you rinse your mouth, S. Use these supplies, please." T says "Thank you" regardless of S's response(s) and records each response (1-7 of the objective) as a "+" or "-" on the data sheet (See data sheet Appendix B). A trial is only counted as correct if the S performs all seven responses correctly and in sequence.

Teaching Steps:

1. Modeling: T stands in front of the sink with a cup and bottle of mouthwash, and says, while modeling the responses, "S, this is how you rinse your mouth; take the cap off the bottle, pour that mouthwash into the cap, pour that mouthwash into the cup, put the cap back on the bottle, pour that mouthwash from the cup into your mouth, swish it around, and spit it out in the sink." The sequence is modeled for each student before the testing and instruction segment.

2. Testing and Instruction: S stands in front of the sink. A cup and bottle of mouthwash are placed in front of him. T says, "Show me how you rinse your mouth. Use these supplies, please."

a. Correct response(s) - verbal praise from T. Note that verbal praise was initially given after each response in the sequence but was gradually faded, so S was required to perform an increasing number of steps correctly before reinforcement was given.

b. Incorrect response - at any point in the sequence T stopped S and says, "No, S, do it like this," and modeled the correct response with the appropriate verbal cue for that step.
   1) Correct response - T says, "That's better," and instructs S to continue the sequence.
   2) Incorrect response - T stops S and says, "No, S, do it like this," and primes the correct response with the appropriate verbal cue for that step. T then instructs S to continue with the sequence.

3. Criterion: Follow the above procedure until the student has three consecutive correct trials, i.e., the students perform all responses correctly and in sequence three times in a row.

Results and Discussion:

The results indicated (Table 5) that none of the students knew the mouthwashing routine before instruction. However, all students (except S_4) learned the routine after only one modeling (it only took three trials to criterion indicating that they made no errors). This may be explained by the fact that most of the students already knew many of the components of the chain (See Table 5 - percent of correct responses) and learned the correct sequence during the modeling session. (See Table 5 on following page)

C. Premenstrual Training

Paula Dedrick

The premenstrual training program was designed to teach the identification of the menstrual period and a hygienic routine to follow once it was identified. It was felt that teaching the students to use sanitary equipment and to identify their period from simulated menstrual blood prior to actual menstruation, would facilitate following an appropriate hygienic routine at an actual occurrence. For this reason menstrual hygiene was taught to the students before their first period.

Prior to the designing of this program, the parents of the students to be involved were contacted and asked what type of sanitary equipment they wanted their daughter to use. From this information a program was designed and individualized for each student. A copy of the premenstrual program with adaptations for home use were

Table 5

Mouthwash

Students	Baseline % of Correct Responses	Baseline % of Responses Correct and in Sequence	Number of Trials to Criterion
$\underline{S}_1$	86%	43%	3
$\underline{S}_2$*			
$\underline{S}_3$	43%	14%	3
$\underline{S}_4$	71%	14%	6
$\underline{S}_5$	86%	29%	3
$\underline{S}_6$	71%	14%	3
$\underline{S}_7$	86%	29%	3

* $\underline{S}_2$ was not included in this program at the request of the parents.

then mailed to the parents to aid in home education and generalization of the skill. The program was broken into five phases. They were: I) teaching the students identification of menstruation; II) teaching the students a hygienic routine subsequent to identification; III) teaching the students to request sanitary equipment; IV) teaching the students to receive the equipment and bathroom preparation; and V) teaching the students the application of selected sanitary equipment. These five phases were taught beginning with Phase I. When Phase I was mastered, Phase II was taught as a sequel, that is, Phase II was chained onto Phase I. When the student was proficient at performing Phases I and II as a single sequence, Phase III was chained onto it. This chaining was continued until all five phases were performed as a single sequence. Phase V was taught concurrently with Phases I through IV because of its complexity. It then could be chained onto Phase IV when Phases I-IV were mastered as a single sequence.

In teaching the identification of menstruation simulated blood was presented in two forms: I) a stained piece of toilet paper and II) a stained insert placed in the students' underpants. The procedures for the presentation of the simulated stains is explained in detail in Phase I. Each phase had two parts, one for each presentation procedure (Part I and Part II).

Instruction and measurement were incorporated in a "model-test-teach" design. That is, the teacher would first model the correct responses in sequence for the students (See Phase I-A, Part I, Step 1 for more details). Then the students would be given a cue to respond and required to imitate the responses modeled in the correct sequence. If any response was performed incorrectly or out of sequence the student was stopped, taught the correct response and then asked to proceed. Criterion on each phase required the student to perform the correct responses in sequence on at least three consecutive trials. A trial consisted of completion of the response sequence.

The instructional sequence was as follows:

1. Baseline terminal objective, Parts I and II and Baseline Phase V
2. Teach Phase I, Parts I and II, with high intensity cues to criterion
   a. Rebaseline Phase I with medium and light intensity cues
   b. If necessary, teach Phase I with medium and low intensity cues
3. Teach Phase V concurrently with Phases I-IV
4. Rebaseline terminal objective, Parts I and II
5. Teach Phase II, Parts I and II, to criterion
6. Rebaseline terminal objective, Parts I and II

7. Teach Phase III, Parts I and II, to criterion
8. Rebaseline terminal objective, Parts I and II
9. Teach Phase IV, Parts I and II, to criterion
10. Rebaseline terminal objective, Parts I and II
11. If necessary, chain Phase V onto Phase IV
12. Rebaseline terminal objective, Parts I and II

Prior to teaching, a baseline measure (which was a baseline of the terminal objective) was administered to determine each student's ability to identify her menstrual period and perform a hygienic routine. The baseline measure involved testing the student's ability to identify simulated menstrual blood, execute a hygienic routine immediately following identification, and apply hygienic equipment. For a response to be scored correct it had to be correct and in sequence. The scoring code consisted of a "+" for a correct response, a "-" for an incorrect response and an "r" for a correct response out of sequence. An "r" was graphed as a "-" or error response. Upon reaching criterion on Phase I, II, or III, a rebaseline was administered on the next phase before it was taught. This rebaseline served two purposes: 1) to assess whether the students could perform the previously taught phases correctly and in sequence without a model, and 2) re-evaluate the student's knowledge of the phase to be taught.

Task Analysis

Purpose:

1. Identification of menstrual period
2. Practice of a hygienic routine for the menstrual period
3. Independence in menstrual hygiene

Materials:

1. Stained underpants
2. Stained toilet paper of varying intensities
3. Stayfree maxi-pads
4. Modess sanitary brief
5. Pursettes tampons (regular absorbancy)
6. Stained cotton inserts for underpants - the stain being of varying intensities
7. Data sheets listing the steps of the hygienic routine

Vocabulary:

1. period
2. menstruation
3. menstruating
4. (menstrual) blood
5. vagina
6. sanitary pad
7. Kotex pad
8. tab (short and long)
9. brief
10. pants

11. blue line on pad
12. strip
13. sticky strip on pad
14. tampon
15. cellophane
16. string
17. tip
18. unravel
19. sanitary equipment
20. elastic (front and back)

Objective:

When S views simulated menstrual blood on a piece of toilet paper or on her underpants, S will verbally identify this as her menstrual period and complete the hygienic routine outlined below on at least three consecutive trials.

Teaching Procedure

Baseline:

Terminal Objective Part 1: T takes S into bathroom. S is instructed to sit on the toilet (pants down). T instructs S to wipe with the stained toilet paper (high intensity cue) and says, "When you wipe you see this. What does it mean?" (A correct reponse would include the words "my" and "period.")

a. T says, "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

T asks, "What do you do?"

b. T says, "Thank you" regardless of the response (a correct response would constitute S performing a hygienic routine) and records the response as "+" or "-" on the data sheet. A correct response must be completed in correct sequence.

Terminal Objective Part II: T takes S into bathroom. S is instructed to sit on the toilet (pants down). T puts a stained insert (high intensity cue) in the crotch of S's underpants and says, "When you pull down your pants you see this. What does it mean?" (A correct response would include the words "my" and "period.")

a. T says, "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

T asks, "What do you do?"

b. T says, "Thank you" regardless of the response (a correct response would constitute S performing a hygienic routine) and records the response as "+" or "-" on the data sheet. A correct response must be completed in correct sequence.

Phase V: T takes S into the bathroom. T hands S appropriate sanitary equipment and asks, "What do you do with this?"

a. T says, "Thank you" regardless of the response (a correct response would entail S putting on the equipment properly) and records the response as "+" or "-" on the data sheet. A correct response must be completed in correct sequence.

Teaching Steps:

Phase I: Teaching identification of menstruation

A. With high intensity simulated blood stains Phase I and Phase II may be taught concurrently.

Part I - With toilet paper cue.

1. Modeling: While in the bathroom stall, T sits on toilet and wipes with stained toilet paper. T then points to the stain and says, "See this? It means I have my period."

2. Testing and Instruction: T presents stained toilet paper to S and says, "When you wipe, you see this. What does it mean?"
   a. Correct response - T verbally praises S.
   b. Incorrect response - T says, "No, S, you say, 'I have my period.'" T models the correct response until S imitates the response.

3. Criterion: Follow the above procedure until S performs the correct response on at least three consecutive trials.

Part II - With insert cue in underpants. The procedure for Part II is identical to Part I except the verbal cue is slightly different due to changes in the materials. Example - "When you pull down your pants you see this (instead of "When you wipe"). What does it mean?"

B. With medium and a low intensity simulated blood stains.

Rebaselines: Same as object 1 and 2 except only medium and light blood stains were used to test for transfer of identification in skills from high to medium and light blood intensities.

Part I - With toilet paper cue, medium and low intensity.

1. T takes S into bathroom. S is instructed to sit on the toilet (pants down). T instructs S to wipe with the stained toilet paper and says, "When you

wipe you see this. What does it mean?" (A correct response would include the words "my" and "period.")

a. T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet.

Part II - With insert cue with medium and low intensity cues.

2. T takes S into bathroom. S is instructed to sit on the toilet (pants down). T puts a stained insert in the crotch of S's underpants and says, "When you pull down your pants you see this. What does it mean?" (A correct response would include the words "my" and "period.")
   a. T says "Thank you" regardless of the response and records the response as "+" or "-" on the data sheet. A correct response must be completed in correct sequence.

Teaching Steps:

If the students had not generalized identification of menstruation to the medium and low level intensities, they would have been taught in two concurrent phases (toilet paper and insert) utilizing the same "model- then test-teach" paradigm used to teach the high intensity cue parts. Simulated blood stains of varying intensities were randomly used throughout the remainder of the program.

Phase II: Teaching the students a hygienic routine subsequent to identification.

Rebaseline: The same procedures as in baseline steps 1 and 2 were followed.

Parts I and II may be taught concurrently.

Part I - With toilet paper cue.

1. Modeling: While in bathroom stall, T sits on toilet and wipes with stained toilet paper. T then points to the stain and says, "See this? It means I have my period. When I have my period I do this." T says the verbal cues (C_1, C_2, etc.) listed and models the correct responses.

C_1 "Drop the paper in the toilet"
T drops the stained paper in toilet.

C_2 "Tear off clean paper."
T tears off clean toilet paper.

C_3 "Wipe yourself off."
T wipes vaginal area.

C_4 "Drop the paper in the toilet."
T drops the paper in toilet.

C_5 "Stand up."
T comes to standing position.

C_6 "Pull up your pants."
T pulls up underpants and other clothing (tights, slacks, etc.).

C_7 "Flush the toilet."
T pushes down on toilet handle until it flushes.

C_8 "Leave the stall."
T opens stall door and walks out.

C_9 "Wash your hands."
T washes hands.

2. *Testing and Instruction:*
   a. *T* directs *S* to sit on the toilet (pants down) and to wipe with stained toilet paper and says, "When you wipe, you see this." *S* should give a correct response as outlined in Phase I. *T* then asks, "What do you do?" *S* should complete the series of responses outlined in Phase II, Part I-1 in sequence.
      1) Correct response - *T* verbally praises *S* intermittantly during the course of *S*'s correct responses.
      2) Incorrect response - *T* says, "No, *S*, after you (*last correct response*), you (*verbal cue for error response*)." *T* prompts and/or primes *S* through the correct response. This procedure is followed until *S* completes the chain of responses correctly.

   b. *T* directs *S* to sit on the toilet (pants down) and to wipe with stained toilet paper and says, "When you wipe, you see this." *S* should give a correct response to the question as outlined in Phase I and to complete the series of responses outlined in Phase II, Part I-1 in sequence.
      1) Correct response - *T* verbally praises *S* intermittantly during the course of *S*'s correct responses.

2) Incorrect response - T says, "No, S, after you (last correct response) you (verbal cue for error response)." T prompts and/or primes S through the correct response. This procedure is followed until S completes the chain of responses correctly.

There could be another step between A and B. The verbal cue for this step would be, "When you wipe you see this. What does it mean?" S would then be required to complete the same responses as in A and B. This step was not used in the program because it was felt that the cue, "What does it mean?" should be faded out as quickly as possible. In a real situation there would be no one giving that cue to the student.

3. Criterion: Follow the above procedure until S correctly completes the responses outlined correctly and in sequence on at least three consecutive trials.

Part II - With insert cue.

The procedure for Part II is the same as Part I except for a change in the verbal cue as described in Phase I-A, Part II and the deletion of C_1 from the routine.

Phase III: Teaching the students to request sanitary equipment.

Rebaseline: The same procedures as in baseline steps 1 and 2 were followed.

Part I and II may be taught concurrently.

Part I - With toilet paper cue.

1. Modeling: While in bathroom stall, T sits on toilet and wipes with stained toilet paper. T then points to the stain and says, "See this? It means I have my period. When I have my period, I do this." T says verbal cues (C_1, C_2, etc.) and models the response chain listed in Phase II, Part I-1 and then models the response chain for Phase III.

C_1 "Leave the bathroom."
T opens the door and walks out of bathroom.

C_2 "Go to our room."
T walks to appropriate classroom.

C_3 "Go inside the room."
T enters the classroom.

C_4 "Walk over to (teacher)."
T walks over to the classroom teacher.

C_5 "What do you need?"
T says, "I need a (sanitary equipment to be used)."

2. Testing and Instruction:
   a. T directs S to sit on the toilet (pants down) and to wipe with stained toilet paper and says, "When you wipe, you see this." S should give a correct response and complete the series of responses outlined in Phases II and III, Part 1.
      1) Correct response - T verbally praises S intermittantly during the course of S's correct responses.
      2) Incorrect response - T says, "No, S, after you (last correct response) you (verbal cue for error response)." T prompts and/or primes S through the correct response. This procedure is followed until S completes the chain of responses correctly and in sequence.

   b. T cirects S to sit on the toilet (pants down) and to wipe with stained toilet paper and says, "When you wipe, you see this." S should give a correct response to the question as outlined in Phase I and complete the chain of responses outlined in Phase II and Phase III, Part I-1.
      1) Correct response - T verbally praises S intermittantly during the course of S's correct responses.
      2) Incorrect responses - T says, "No, S, after you (last correct response) you (verbal cue for error response)." T prompts and/or primes S through the correct response. This procedure is followed until S completes the chain of responses correctly and in sequence.

3. Criterion: Follow the above until S correctly completes the responses outlined on at least three consecutive trials.

Part II - With insert cue.

The procedure for Part II was the same as Part I except for a change in the verbal cue as described in Phase I-A, Part II and the deletion of C_1 from the routine as described in Phase II, Part I-1.

Phase IV: Teaching the students to receive the equipment and bathroom preparation. (This phase has not been implemented yet due to time restrictions.)

Rebaseline: The same procedures as in baseline steps 1 and 2 were followed.

Part I and II may be taught concurrently.

Part I - With toilet paper cue.

1. Modeling: While in bathroom stall, T sits on toilet and wipes with stained toilet paper. T then points to the stain and says, "See this? It means I have my period. When I have my period, I do this." T says the verbal cues (C_1, C_2, etc.) and models the response chain listed in Phase II and III, Part I-1 and then models the response chain and verbal cues of Phase IV.

   C_1 T_2 hands T_1 the appropriate sanitary equipment.
   T grasps and holds sanitary equipment.

   C_2 "Go to the bathroom."
   T walks to the girl's bathroom.

   C_3 "Go inside the bathroom."
   T opens the door and walks into the bathroom.

   C_4 "Go inside a stall."
   T opens stall door and walks inside.

   C_5 "Close the door."
   T closes the door to the stall.

2. Testing and Instruction:
   a. T directs S to sit on the toilet (pants down) and to wipe with stained toilet paper and says, "When you wipe, you see this." S should give a correct response as outlined in Phase I and complete the series of responses outlined in Phases II, III, and IV, Part I-1.
      1) Correct response - T verbally praises S intermittantly during the course of S's correct responses.

2) Incorrect response - T says, "No, S, after you (last correct response) you (verbal cue for error response)." T prompts and/or primes S through the correct response. This procedure is followed until S completes the chain of responses correctly and in sequence.

b. T directs S to sit on the toilet (pants down) and to wipe with stained toilet paper and says, "When you wipe, you see this." S should complete the series of responses outlined in Phases I, II, III and IV, Part I-1.
   1) Correct response - T verbally praises S intermittantly during the course of S's correct responses.
   2) Incorrect response - T says, "No, S, after you (last correct response) you (verbal cue for error response)." T prompts and/or primes S through the correct responses. This procedure is followed until S completes the chain of responses correctly.

3. Criterion: Follow the above until S correctly completes the responses outlined on at least three consecutive trials.

Part II - With insert cue.

The procedure for Part II is the same as Part I except for a change in the verbal cues as described in Phase I-A, Part II and the deletion of C_1 from the routine described in Phase II, Part I-1.

Phase V: Teaching the student the application of the sanitary equipment.

Rebaseline: The same procedures as in baseline steps 1 and 2 were followed. The routines described in Phase V may be taught concurrently with Phases I-IV because of their complexity. When the student has mastered Phases I-IV, Phase V is then chained into the sequence.

Part I - Toilet paper cue.

1. Modeling: While in bathroom stall, T sits on toilet and wipes with stained toilet paper. T then points to the stain and says, "See this? It means I have my period. When I have my period, I do this." T says the verbal cues (C_1, C_2, etc.) and models the response chain listed in Phases II,

III, and IV, Part I-1 and then says the verbal cues and models one of the response chains listed below. Note: When the application routine is being taught concurrently with Phases I-IV, T only models the actual application routine for S.

STAYFREE MAXI-PADS

C_1 "Put the pad on the back of the toilet."
T places pad on back of toilet.

C_2 "Pull down your pants."
T pulls pants down to knees.

C_3 "Sit down on the toilet."
T sits on the toilet seat.

C_4 "Pick up pad and peel off the strip."
T picks up pad and peels off the strip.

C_5 "Put the strip on the back of the toilet."
T puts strip on back of toilet.

C_6 "Place the sticky side down on your pants."
T places sticky side down on pants.

C_7 "Press pad into your pants."
T pushes pad against pants.

C_8 "Stand up."
T stands up.

C_9 "Pull up your pants."
T pulls up pants.

C_{10} "Press the pad into your pants."
T presses along outside of pants, against body.

C_{11} "Pick up the strip."
T picks up strip.

C_{12} "Leave the stall."
T opens stall door and walks out.

C_{13} "Throw the strip away."
T walks over to wastebasket and throws strip in.

C_{14} "Wash your hands."
T washes hands.

MODESS SANITARY BRIEF AND KOTEX SANITARY NAPKIN

C_1 "Put the box on the back of the toilet."
T puts Kotex on back of toilet.

C_2 "Sit down on the toilet."
T sits on toilet seat.

C_3 "Take off your pants."
T takes off pants, tights, underpants, etc.

C_4 "Put on the brief (pants)."
T puts briefs on.

C_5 "Pull the brief up to your knees."
T pulls brief up to her knees.

C_6 "Pick up the box."
T picks up box from back of toilet.

C_7 "Open the box."
T opens the flap on the kotex box.

C_8 "Take out the pad."
T takes pad out of box.

C_9 "Put the box on the back of the toilet."
T places box on the back of the toilet.

C_{10} "Unfold the tabs."
T unfolds the tabs of the napkin.

C_{11} "Face the blue line down."
T faces the blue line away from her.

C_{12} "Put the end with the short tab under the front elastic."
T slides end with short tab under front elastic.

C_{13} "Put the end with the long tab under the back elastic."
T slides end with long tab under back elastic.

C_{14} "Stand up."
T stands up.

C_{15} "Pull up your brief."
T pulls up brief.

C_{16} "Put on your other clothes."
T puts on other clothing (excluding underpants).

C_{17} "Pick up the box."
T picks up the box.

C_{18} "Pick up your underpants."
T picks up underpants.

C_{19} "Leave the stall."
T opens door and walks out of the stall.

C_{20} "Throw the box away."
T walks over to wastebasket and throws box in.

C_{21} "Wash your hands."
T washes hands

PURSETTES TAMPON "REGULAR"

C_1 "Put the tampon on the back of the toilet."
T places tampon on back of toilet.

C_2 "Pull down your pants."
T pulls down pants.

C_3 "Sit down on the toilet."
T sits on toilet seat.

C_4 "Pick up the tampon."
T picks up tampon.

C_5 "Take off the cellophane."
T tears the cellophane and removes it from the tampon.

C_6 "Put the cellophane on the back of the toilet."
T puts cellophane on toilet.

C_7 "Unravel the string."
T straightens out string.

C_8 "Spread your vagina with your fingers."
T spreads vaginal lips with hand not holding tampon.

C_9 "Push the tampon all the way into your vagina."
T pushes tampon into vagina until tampon is no longer exposed.

C_{10} "Stand up."
T stands up.

C_{11} "Pull up your pants."
T pulls up her pants.

C_{12} "Pick up the cellophane."
T picks up the cellophane.

C_{13} "Leave the stall."
T opens the door and walks out of the stall.

C_{14} "Throw the cellophane away."
T walks over to wastebasket and throws cellophane in.

C_{15} "Wash your hands."
T washes hands.

2. Testing and Instruction:
   a. T directs S to sit on the toilet (pants down), to wipe with stained toilet paper and says, "When you wipe, you see this." S should give a correct response as outlined in Phase I and to complete the series of responses outlined in Phases II, III and IV, Part I-1. T then asks, "What do you do?" S is required to complete the series of responses outlined in Phase V, Part I-1. (Only one routine is necessary.)
      1) Correct response - T verbally praises S intermittantly during the course of S's correct responses.
      2) Incorrect response - T says, "No, S, after you (last correct response) you (verbal cue for error response)." T prompts and/or primes S through the correct response. This procedure is followed until S completes the chain of responses correctly and in sequence.

   b. T directs S to sit on the toilet (pants down), to wipe with stained toilet paper and says, "When you wipe, you see this," S should give a correct response as outlined in Phase I and to complete the series of responses outlined in Phases II, III, IV and V, Part I-1.
      1) Correct response - T verbally praises S intermittantly during the course of S's correct responses.
      2) Incorrect responses - T says, "No, S, after you (last correct response) you (verbal cue for error response)." T prompts and/or primes S through the correct response. This procedure is followed until S completes the chain of responses correctly.

3. Criterion: Follow the above until S correctly completes the responses outlined on at least three consecutive trials.

Part II - With insert cue.

The procedure for Part II is the same as Part I except for a change in the verbal cue as described in Phase I-A, Part II and the deletion of C_1 from the routine described in Phase II, Part I-1.

Adaptations for the home.

1. Phase I - no change.
2. Phase II, Parts I and II - exclude C_8 "Leave the stall."
3. Phase III, Parts I and II change to:

C_1 "Leave the bathroom."
S opens the door and walks out of bathroom.

C_2 "Find your mother."
S locates mother and approaches her.

C_3 "What do you need?"
S says, "I need a (sanitary equipment to be used)."

C_4 Mother hands S the appropriate sanitary equipment.
S grasps and holds onto sanitary equipment.

4. Phase IV, Parts I and II exclude C_4 "Go inside a stall."
5. Phase V, Parts I and II exclude "Leave the stall."

Results and Discussion:

The results of the baseline (Table 6) indicated that the students could not identify simulated menstrual blood as a "period" or follow a hygienic routine when they encountered the blood (See baselines correct and in sequence). S_1 and S_2 both demonstrated that they could correctly perform some of the responses necessary for using sanitary equipment but not in the correct sequence (See Phase V, baseline number correct not in sequence). Content analysis of S_1's baseline responses showed that she had been exposed to the sanitary equipment before (i.e., some of her correct responses included the actual application of the equipment). Although S_2's mother stated that S_2 had been exposed to sanitary equipment previously, her correct responses did not demonstrate this (i.e., her correct responses involved normal bathroom routine, pulling up pants, etc., not actual application of equipment).

Thus far, $\underline{S}_1$ has learned the hygienic routine through Phase II, Part I and $\underline{S}_2$ has learned the hygienic routine through Phase II, Parts I and II. (Note: Parts I and II of each phase were taught concurrently and Phase V was taught concurrently with Phases I-IV). Although $\underline{S}_1$'s baseline responses indicated exposure to the sanitary equipment, desensitization was necessary because she would not place it close to her body. At this time she has performed the entire response chain of Part V correctly and in sequence but not in three trials consecutively.

The program was run during a fifteen minute recess time when the bathrooms were crowded and teaching had to be rushed. Also, the teacher had to go to great lengths to make the teaching time a positive experience to replace the highly reinforcing recess. Due in part to these reasons the students have not yet progressed through the entire sequence.

Although the program was not completed by either of the students, learning sets had developed (See Comparison A). For example, $\underline{S}_2$ took 4 trials to master two responses in Phase I while she only took 5 trials to master 9 new responses in Phase II. Also, neither student had problems generalizing to the different intensities of stain in Phase II (See generalization to medium and low intensities baseline). (See Table 6 on following pages)

Whether or not the routine taught will generalize to the students' actual menstrual period remains unknown at this time but it is hoped that with this premenstrual training very little teaching will be necessary when menstruation does begin.

V. FAMILY

A. Family Members and Relationships

The purpose of this component of the family-life curriculum was to teach the students the names of all the members of their immediate family and their relationships (e.g., brother, sister). The parents of the students were an essential part of the program in that they provided the teacher with pictures and names of all family members. The family members and relationship program was developed as a requisite to teaching the students the roles of family members and the concepts of sharing, cooperating, playing, and working which are associated with family life.

The program was divided into two phases: I) teaching names of family members; and II) teaching family relationships. Each phase had a terminal objective which was broken into subobjectives of teaching the student the behaviors with: a) visual and verbal cues; and b) verbal cues. The test-teach instructional program described in the procedures section was used.

TABLE 6

Part I Toilet Paper Cues*

	Baselines		Phase I		Phase II		Phase III	
			High Intensity	General. To Med. & Low Inten. Baseline	Rebase-line	Hygenic Routine	Rebase-line	Request Equipment
Students	# correct & in seq.	# correct & not in seq.	trials to criterion	# correct	# correct & in seq.	trials to criterion	# correct & in seq.	trials to criterion
$\underline{S}_1$	0/35	11/35	3	2/2	3/35	4		
$\underline{S}_2$	0/42	5/42	4	2/2	2/42	5	11/42	

*Note: Parts I and II were taught concurrently and should be analyzed as a unit. The table for Part II is on the next page.

TABLE 6

Part II Insert Cues

	Baseline		Phase I		Phase II		Phase III	
			High Intensity	General. To Med. & Low Inten. Baseline	Rebase-line	Hygenic Routine	Rebase-line	Request Equipment
Students	# correct & in seq.	# correct & not in seq.	trials to criterion	# correct	# correct & in seq.	trials to criterion	# correct & in seq.	trials to criterion
S_1	0/35	14/35	3	2/2	2/35			
S_2	0/42	5/42	3	2/2	2/42	5	10/42	

	Phase V			Comparison A	
	Baseline		Trials to Criterion	Part I	Part II
Students	# correct & in sequence	# correct & not in sequence		high inten. trials to criterion	hygenic routine trials to criterion
S_1	0/14	6/14	9*	3 trials to master 2 responses	4 trials to master 9 new responses
S_2	0/21	5/21	6	4 trials to master 2 responses	5 trials to master 9 new responses

* has not reached criterion

The instructional sequence was as follows:

1. Test each student's knowledge of general family.

2. Baseline the terminal objectives of Phase I and II.
    a. If criterion is met (100% correct responding) on terminal objectives go to step 3.
    b. If S fails terminal objective(s) then baseline subobjectives.
        1) If S meets criterion on subobjectives (100% correct responses) teach terminal objective(s) then go to step 3.
        2) If S fails a subobjective teach it (them) and then rebaseline the next subobjective or terminal objective(s) and go to 2b3).
        3) If S meets criterion on rebaseline (100% correct responses) of terminal objective go to step 3. If not, teach it and then go to step 3.

3. Retest each student's knowledge of general family.

The students' knowledge of each phase's terminal objective was baselined. If the student failed on the baseline of the terminal objective, the subobjectives were baselined and if necessary taught to criterion (three consecutive correct responses). Upon reaching criterion on a subobjective or terminal objective a rebaseline of the next subobjective or terminal objective was administered. This rebaseline served two purposes: 1) to reevaluate the students' knowledge of the subobjective or terminal objective to be taught; and 2) to assess transfer of learning from the objective taught to untaught objectives.

Each student's knowledge of general family relationships was tested through requesting the student to point to father, mother, sister(s) and brother(s) on pictures of unfamiliar families, pre and post to all instruction on Phases I and II of the program. During instruction on Phases I and II students who were not being directly instructed were informally requested to point to the pictures of other students' father, mother, sister(s), brother(s).

Task Analysis

Purpose:

1. Identification of specific members of each student's immediate family.
2. Identification of each family member's relationship to the student.
3. Preparation for identification of roles of specific family members.

Materials:

1. Pictures of each member of student's family (as a unit or individually) mounted on a sheet labeled "My Family" and the student's name, with the first (and last - optional) name of each member listed under the picture.
2. Data sheets, listing the names of each student's family members (See Appendix B).

Vocabulary (will differ with individual student):

1. "family"
2. Father's name
3. Mother's name
4. Brother's name(s)
5. Sister's name(s)
6. "father"
7. "mother"
8. "brother"
9. "sister"

Objectives:

Phase I - When asked, "Tell me the names of all the people in your family," S will correctly state the first name of each family member on three consecutive trials.

Phase II - When asked, "Tell me the name(s) of your (father/mother/brother(s)/sister(s))," S will correctly state the names of family members on three consecutive trials.

Teaching Procedure

The terminal objective of Phases I and II were baselined before instruction commenced. If the baseline measure indicated that the student lacked the skill, the subobjectives of the Phase (Steps 1 and 2) were baselined. The students were only taught the terminal objectives and subobjectives they failed.

Phase I: T says, "Tell me the names of all the people in your family, S." T says "Thank you" regardless of S's response, and records the response as "+" or "-" on the data sheet.

Phase II: T says, "Tell me the name of your father/mother/brother(s)/sister(s), S." T says "Thank you" regardless and records a "+" or "-" on the data sheet for each possible response.

Phase I: Teaching Family Members

Teaching Steps:

Step 1 - Visual and Verbal Cue: In the presence of the labeled pictures of S's family, T points to the picture and says, "This is your family. This is your father/mother/brother/sister. His/Her name is _______. What is his/her name?"

a. Correct response - verbal praise from T.

b. Incorrect response - T points to the picture and says, "No, S, his/her name is (model's response). What is his/her name?" T models correct response until S imitates the response.

Step 2 - Visual Cue: In the presence of the labeled pictures, T says, "Tell me the names of all the people in your family, S."

a. Correct response(s) - verbal praise from T.

b1. Incorrect response (omission of name) - T points to the picture and says, "Another person in your family is (model's response). What is his/her name?"
   1) Correct response - T says, "That's better."
   2) Incorrect response - T models correct response until S imitates the response.

b2. Incorrect response (substitution or addition of name) - T says, "No, S, _______ is not a person in your family," and instructs S to continue naming the other persons, if necessary.

Step 3 - Terminal Objective: When S can correctly state the names of all the people in his or her family on three consecutive trials, the pictures are removed. Follow the same procedures as in Phase I - Step 2 above without visual cues.

Phase II: Teaching Family Relationships

Rebaseline: T says, "Tell me the name(s) of your father/mother/brother(s)/sister(s), S." T says "Thank you" regardless of S's response, and records the response "+" or "-" on the data sheet.

Teaching Steps:

Step 1 - Visual and Verbal Cue: In the presence of the labeled pictures of S's family, T points to the picture and says, "This is your father/mother/brother(s)/sister(s). His/Her father's/mother's/brother's/sister's name is _______. Tell me the name of your father/mother/brother(s)/sister(s), S."

a. Correct response - verbal praise from T.

b. Incorrect response - T points to the picture and says, "No, S, your father's/mother's/brother's/sister's name is (model's response). Tell me the name of your father/mother/brother(s)/sister(s)."

Step 2 - Visual Cue: In the presence of the labeled pictures, T says, "Tell me the name of your father/mother/brother(s)/sister(s), S."

a. Correct response(s) - verbal praise from T.

b1. Incorrect response (omission of name) - T points to the picture and says, "Another brother/sister is (model's response). What is his/her name?"
1) Correct response - T says, "That's better."
2) Incorrect response - T models correct response until S imitates the response.

b2. Incorrect response (substitution or addition of name) - T says, "No, S, ______ is not the name of your father/mother/brother/sister." and instructs S to continue naming the other persons, if necessary.

Step 3 - Terminal Objective: When S can correctly state the names of all the people in his or her family, when given the relationship, on three consecutive trials, the pictures are removed. Follow the same procedures as in Phase II, Step 2 above, without visual cues.

Generalization to General Family:

This measure was utilized to assess if the students had learned general family relationships through: learning their own family relations; observing the other students learning theirs; and being informally asked to discriminate other students' father, mother, sister(s), brother(s) during instruction sessions. The measures were taken prior to all instruction and after completion of Part II.

T presented a picture of an unfamiliar family and said, "This is the girl's/boy's family." "Where is his/her father/mother/brother(s)/sister(s), S?" T says "Thank you" regardless of the response and records a "+" for a correct response and a "-" for an incorrect response.

Results and Discussion:

The results of the baseline data indicated (See Table 7) that the students could not name all of the members of their families

(Phase I - Terminal Objective) and the majority could not state family relationships (Phase II - Terminal Objective). Further baselining of the subobjectives of Phase I indicated that all students could name their family members given a visual and verbal cue and three out of seven students (S_4, S_6, S_7) could name them when given only a visual cue. (See Table 7 on following pages)

The four students (S_1, S_2, S_3, S_5) who could not name family members when given only a visual cue were taught this skill antecedent to rebaselining the terminal objective of Phase I. The other students (S_4, S_6 and S_7) were rebaselined on the terminal objective of Phase I and if necessary taught it. The results of the rebaseline of the terminal objective of Phase I indicated that three out of the four students (S_2, S_3, S_5) who had been taught to name family members with a visual cue then met criterion on the terminal objective (the skill had transferred) and only one of these students (S_1) had to be taught the terminal objective. It is noteworthy that when S_1, S_2, S_3, S_4, S_5, S_6 were rebaselined on Part II, that their knowledge of family relations was improved, i.e., their percent of correct responses increased (See Comparison A). In fact, three students (S_2, S_3, S_6) met criterion. As the table indicates, all students have not completed Phase II (S_1, S_3, S_7). This is due to lack of time.

The pre-test measures on knowledge of general family relations indicated that three of the seven students (S_2, S_6, S_7) had this skill before entering the program. The two students (S_4 and S_5) who did not demonstrate that they had this skill when they entered the program, upon completion of the program had 100% correct on the post-test measure. The students (S_2 and S_6) who knew family relations before entering the program and who completed the program had 100% correct on the post-test measure. Those students who have not yet completed the family members and relationships program (S_1, S_3 and S_7) have not been post tested on general family relations.

B. Family Roles

(to be implemented)

The family roles program will teach the students the roles of family members in relation to activities (sharing, cooperating, playing, working) which are associated with family life. The program will be divided into two phases: I) teaching the students to discriminate and label activities families do together; and II) teaching the students the roles of individual family members in relation to the activities taught in Phase I.

TABLE 7

Family Member and Relationships

Students	# of Family Members	Baselines				Phase I			
		Phase I	Phase II	Phase I (Subobject.)		Trials to Crit. On Subobject.		Rebaseline Term. Obj.	
		Terminal Objective	Terminal Objective	Visual & Verbal Cue	Visual Cue	Visual & Verbal Cue	Visual Cue	Terminal Objective Rebaseline	Terminal Objective Trials To Criterion
$\underline{S}_1$	8	0%	42%	100%	62%	0	5	75%	7
$\underline{S}_2$	6	66%	66%	100%	33%	0	4	100%	0
$\underline{S}_3$	6	50%	33%	100%	83%	0	6	100%	0
$\underline{S}_4$	3	0%	0%	100%	100%	0	0	100%	0
$\underline{S}_5$	4	50%	100%	100%	50%	0	5	100%	0
$\underline{S}_6$	4	50%	0%	100%	100%	0	0	100%	0
$\underline{S}_7$	4	50%	50%	100%	100%	0	0	50%	5

TABLE 7 (cont.)

	Phase II				General Family		Comparison A	
		Trials to Crit. On Subobject.					Phase II	Phase II
Students	Rebaseline Term. Obj.	Visual and Verbal Cues	Visual Cues	Rebaseline Term. Obj.	Pre-Test	Post-Test	Baseline of Term. Obj.	Rebaseline Term. Obj.
$\underline{S}_1$	63%	0	1+		91%		42%	63%
$\underline{S}_2$	100%				100%	100%	66%	100%
$\underline{S}_3$	100%				83%		33%	83%
$\underline{S}_4$	66%				75%	100%	0%	66%
$\underline{S}_5$	100%				83%	100%	100%	100%
$\underline{S}_6$	100%				100%	100%	0%	100%
$\underline{S}_7$					100%		50%	

VI. SOCIAL INTERACTIONS

(to be implemented)

The purpose of the social interactions program is to teach the students to initiate and receive verbal and physical social interactions which are appropriate to sex, age, and place. Prerequisite to learning appropriate social interactions the students have to know sex and age distinctions to facilitate them making differential social interactions on the basis of age and sex. Severely handicapped individuals often fail to engage in appropriate social interactions because they lack the requisite skills of initiating, sustaining (e.g., playing games, conversation, dancing, reading, talking) and ending an interaction. The program will emphasize building in these positive behaviors rather than merely decelerating inappropriate behaviors.

The program will be divided into three phases: 1) teaching appropriate initiation, sustaining and ending a selected interaction with peers, adults and young children; 2) teaching the students to reject or accept (if accept, to sustain and end) appropriate interactions with peers, adults and young children; and 3) teaching the students to appropriately and effectively reject inappropriate physical or verbal interactions initiated by peers, adults, or young children.

Due to the nature of the skills they will be taught through role playing. Measurement of the attainment of the behavioral objectives and generalization to untaught situations will be taken subsequent to each instructional role playing session. In the role playing sessions appropriate initiating, receiving, sustaining and ending routines will be modeled for the students. The students will then be asked to imitate the model and if necessary prompted through the correct response sequence. In the measurement section the students will be given a cue to respond and their behavior measured as they go through the response sequence.

VII. SOCIAL MANNERS

(to be implemented)

The purpose of the social manners component of the family-life curriculum is to teach the students socially appropriate dressing, walking, sitting, and general posturing. The basic notion underlying the program is that teaching the students appropriate hand placement, dress, and posturing will facilitate the deceleration of such behaviors as hands on genitals, unbuttoning of blouses in public, and unwittenly suggestive posture. Prerequisites for the social manners program are mastery of dressing skills (e.g., zipping, snapping, tucking in) and of the body parts program.

Due to differences in clothing, posture and walk requirements, separate programs will be designed for male and female students. The skills will be taught through role playing with measurement after each instructional session.

VIII. GENERAL DISCUSSION

An empirically based family-life curriculum designed to meet the immediate needs of the severely handicapped students involved was successfully initiated. The results (as described above in the bodily distinctions, self-care and family sections) indicated that all the students learned several rudimentary family-life skills, i.e., discriminating and labeling body parts including genitals (Table 2) using mouthwash (Table 5), and labeling family members with a visual cue (Table 7); these skills form the basis for more complex skills, i.e., sex distinctions with and without clothing (Tables 2 and 3), use of sanitary equipment (Table 6), and naming specific family members and relationships (Table 7) which all the students have not yet learned.

As stated in the rationale, the family-life curriculum was implemented to teach students more appropriate social and expressive language alternatives for inappropriate social behaviors. The programs of the curriculum implemented thus far have concentrated on teaching the students expressive vocabulary and language comprehension which will be built upon in later programs, i.e., the students will have to know how to label body parts and distinguish between man-woman and boy-girl as a prerequisite to learning the skills taught in the social manners and social interactions programs.

The data indicated some generalization of the skills taught to untaught conditions. For example, some students' abilities to label body parts on unclothed representational figures in the classroom generalized to real people in a shower room (Table 2) and same students' abilities to label and make sex distinctions on unclothed representational figures in the classroom generalized to real people. Similarly, there was generalization from specific to general family relationships (Table 7).

The data alone cannot capture all of the dramatic behavior changes that occurred over the course of the semester. It is interesting to note that recently one female student, whose baseline data had indicated a severe deficiency in expressive vocabulary, asked the teacher to accompany her to a stall in the girls' bathroom at recess. After entering the stall the girl showed the teacher her (the girl's) first pubic hair and said, "See? Pubic hair, to grow. I am a woman." Similarly, after being taught body parts, some students were informally taught hand placements and gestures that are incompatible with public masturbation and suggestive posture.

Parental and administrative cooperation were crucial in the initial implementation stages of the curriculum and parental participation was essential for facilitating generalization of many of the skills taught to the home setting. With this continued cooperation, the family-life curriculum will be further designed and implemented in the summer and fall of this year. The programs have been and will be constantly re-evaluated, re-written and added to as the students' performance data dictates.

IX. REFERENCES

A. Overview

Three lists of references for use in conjunction with the "Family-Life" curriculum have been compiled. All the references pertain to issues related to family life and the severely handicapped. The first list is for professionals. This list covers a broad range of material related to topics of potential interest to professionals developing a family life curriculum for severely handicapped students. The list has been broken into sections entitled: issues in family-life training; general proposed instructional methods; physical and biological aspects; self-care skills; legal aspects; working with parents; marriage and parenthood; contraception, sterilization, abortion and family planning; and general information. The second list is for parents of severely handicapped children and contains references on: teaching self-help skills; issues in sex education; general information related to "Family-Life"; and contraception, sterilization, and abortion. The third list is for students (children). The books chosen are for the student to look at and read themselves or for parents and teachers to read to them. The students' book list contains books on: the body and how it grows; human and animal families; friends; taking care of oneself; good manners; feelings; and how babies are made and born. These references are available in the local public libraries, university libraries and local bookstores.

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X. APPENDIXES

Appendix A

Parental Interactions

Family-Life Skills

The following is an outline of the topics to be covered, beginning during the Spring Semester, 1974, to meet the present needs of young adolescent handicapped students, as determined by their teachers and parents.

A. Body Parts

1. Recognizing and naming basic body parts (a list is attached)
2. Distinctions between sexes
    a. Boy-Girl
    b. Man-Woman
3. Bodily changes related to growth
    a. Hair
    b. Size of organs
    c. Height
    d. Weight

B. Self-Care Skills

1. Basic grooming skills (a list is attached)
2. Care of bodily functions
3. Basic dressing skills (a list is attached)

C. Social Manners

1. Female
    a. Type of dress
    b. Positioning of clothing (dress down, blouse buttoned, etc.)
    c. Appropriate:
        1) Sitting
        2) Standing
        3) Walking
        4) Bending
        5) Hand placement

2. Male
    a. Positioning of clothing (zipper zipped)
    b. Appropriate:
        1) Sitting
        2) Standing
        3) Walking
        4) Hand placement

D. Appropriate Social Interactions With Persons of the Same and Opposite Sex

1. Conversations with different people in different situations
    a. With peer; friends (same and opposite sex)
        1) In class
        2) Out of class, in school
        3) Out of school
    b. With adults
        1) In class
        2) Out of class, in school
        3) At home
        4) In community
    c. With lower-age children
        1) In school
        2) At home
        3) In community

2. Physical contact appropriate to time, place, age and sex
    a. Shaking hands
    b. Holding hands
    c. Patting on the back
    d. Hugging
    e. Kissing
    f. Touching
    g. Necking
    h. Petting

E. Family Life

1. What is a family?
    a. In general
        1) Familiar animal families

2) Human families
  a) Father
  b) Mother
  c) Children
b. Each child's specific family

2. Responsibilities of family life
  a. Sharing
  b. Helping
  c. Cooperating

F. Body Parts

1. Head
2. Hair (on head)
3. Eyes
4. Nose
5. Mouth
6. Ears
7. Neck
8. Shoulders
9. Back
10. Arms
11. Elbows
12. Wrists
13. Hands
14. Fingers
15. Chest
16. Breasts
17. Nipples
18. Stomach
19. Pubic hair
20. Navel
21. Penis
22. Vagina
23. Crotch
24. Buttocks
25. Legs
26. Knees
27. Ankles
28. Foot (feet)
29. Toes

G. Basic Grooming Skills

1. Brushing hair
2. Parting hair
3. Washing hairbrush
4. Washing hair
5. Setting hair
6. Styling hair
7. Brushing teeth
8. Using mouthwash
9. Treatment of acne
10. Washing face and neck area
11. Washing hands
12. Using hand cream and body lotion
13. Cleaning under fingernails
14. Clipping fingernails
15. Filing fingernails
16. Cleaning ears
17. Washing underarm area
18. Using deodorant
19. Washing feet
20. Cleaning toenails

21. Clipping toenails
22. Washing all critical areas with a washcloth at the sink
23. Taking a bath
24. Taking a shower
25. Shaving face (males)
26. Shaving underarms (females)
27. Shaving legs (females)
28. Menstrual hygiene
    a. Using sanitary equipment
    b. Cleansing genitalia

H. Basic Dressing Skills

1. Zipping zippers
2. Snapping snaps
3. Buttoning buttons
4. Hooking hooks and eyes
5. Tieing ties (on clothes)
6. Buckling buckles
7. Putting on a garment which opens down the front
8. Putting on a garment over the head
9. Putting on pants
10. Putting on socks
11. Putting on pantyhose or tights
12. Putting on shoes
13. Tieing shoes
14. Lacing laces
15. Straightening own clothes after they are on and/or messed up
16. Matching colors
17. Matching figures
18. Matching types of clothes together
19. Fitting clothes (too large, too small)
20. Dressing appropriately for specific environment (school, play, work)
21. Dressing appropriately for different weather conditions.

Parent Conference Report

Person(s) Attending Conference ______________________________

Date of Conference ______________________________

1. Have you talked to your child about:

    a. Body parts (with appropriate names for genitals)?
    b. Self-care skills (including menstrual hygiene for girls)?
    c. Acting "like a lady (or gentleman)?"
    d. Verbal and physical contact with others?
    e. Family life?
    f. How babies are really made?

2. In reference to #1, what skills do you know your child has already acquired?

3. What additional skills do you think your child should acquire?

4. Discuss needs (if any, in this area) presently existing in the school environment.

5. How are present needs being handled in school? Also, discuss possible methods of handling these needs in the future.

6. What needs (in this area) are presently existing in the home environment?

7. How are present needs being handled in the home? Also, discuss possible methods of handling these needs in the future.

8. Discuss the need for cooperation between home and school, for consistancy and generalization.

9. What kind of future living environment do you presently foresee for your child?

Appendix B

Sample Data Sheets and Graph

The same data sheet format was used across instructional programs. The students' names were listed along the perimeter perpendicular to the vertical axis and the responses to be scored were listed along the perimeter perpendicular to the horizontal axis. Thus, in the body parts program the body parts being taught were listed perpendicular to the horizontal axis; in the mouthwash program the responses were listed in sequence perpendicular to the horizontal axis, etc. To illustrate, sample data sheets from the body parts and mouthwash program follow.

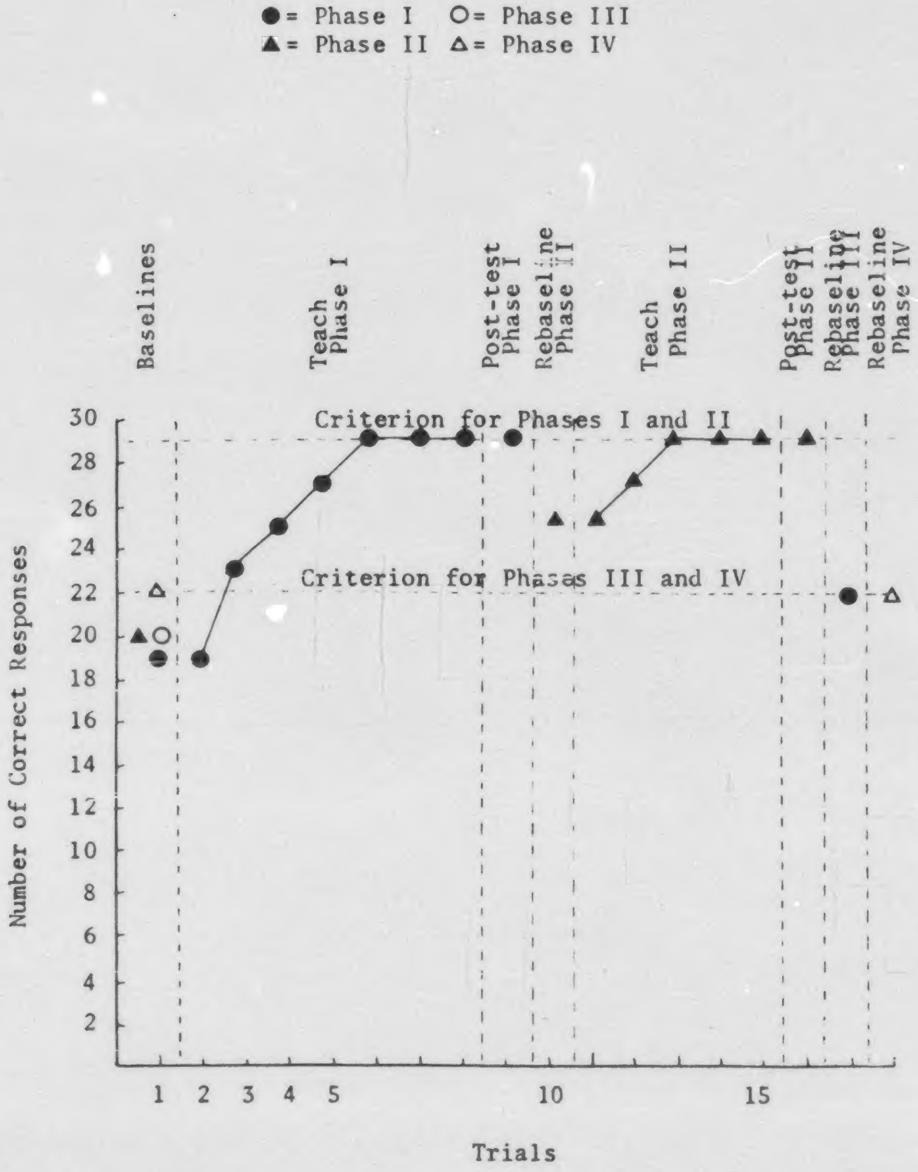
Sample Body Parts Data Sheet

student	head	hair	eye	nose	mouth	ear	neck	shoulder	back	arm	elbow	wrist	hand	finger	chest	breast	nipple	Total correct	Percent correct
$\underline{S}_1$	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	15	89%
$\underline{S}_2$																			
$\underline{S}_3$																			
$\underline{S}_4$																			
$\underline{S}_5$																			
$\underline{S}_6$																			
$\underline{S}_7$																			

Sample Mouthwash Data Sheet

Student	Take Cap Off Bottle	Pour Mouthwash into Cap	Pour Mouthwash into Cup	Put Cap On Bottle	Pour Mouthwash into Mouth	Swish Around	Spit into Sink	Total Correct	Total Correct in Sequence	Percent Correct in Sequence
S_1	+	+	+	-	+	+	+	6	3	41%
S_2										
S_3										
S_4										
S_5										
S_6										
S_7										

Sample Graph - Body Parts



Appendix C

Sex Distinctions With Clothes - Distinctive Apparel List

Men

suit
tie
hat and/or cap
shoes
swim suit
coat
moustache
beard
long hair
medium hair
short hair

Women

short or long dress
short or long skirt
ruffled blouse or dress
sleeveless blouse or dress
long coat
nylons
high-heeled shoes or boots
purse
earrings
necklace
bracelet
barrette or hair ribbon
2-piece swim suit
lipstick
long hair
medium hair
short hair

Boys

suit
tie
hat or cap
shoes
coat
swim suit
long hair
medium hair
short hair

Girls

long or short dress
long or short skirt
ruffled blouse or dress
sleeveless blouse or dress
long coat
tights
shoes
purse
necklace or bracelet
barrette or hair ribbon
swim suit
long hair
medium hair
short hair

Appendix D

Self-Care Skills - Domestic Maintenance and Cooking Skills Lists

Basic Domestic Maintenance Skills

1. Cleaning (polishing) shoes
2. Washing clothes by hand
3. Sorting clothes by color before washing
4. Washing clothes by a washing machine
5. Hanging clothes to dry
6. Drying clothes in a dryer
7. Using public laundromat
   a. Washer
   b. Dryer
8. Folding flat clothes
9. Hanging clothes on hangers (blouses, shirts, pants)
10. Ironing flat clothes
11. Ironing non-flat clothes
12. Sewing on buttons
13. Mending a tear in a seam or in material
14. Darning a sock
15. Dusting flat and non-flat surfaces
16. Vacuuming a rug
17. Sweeping a floor, using dust pan
18. Wet-mopping a floor
19. Making a bed
   a. Changing bed linens
20. Doing dishes
   a. Clearing table
   b. Scraping dishes
   c. Washing, rinsing dishes
   d. Drying dishes
   e. Putting dishes away
21. Setting a table
22. Using table tools (spoon, fork, knife, cup)

Basic Cooking Skills

1. Using a can opener (hand)
2. Using a bottle opener
3. Setting stove burners to proper temperature
4. Setting a timer on an oven
5. Setting oven temperatures
6. Preparing simple breakfasts
   a. Toast with butter
   b. Cold cereal with milk
   c. Toaster waffle with butter and syrup
   d. Toaster french toast with butter and syrup
   e. Frozen orange juice
   f. Fried egg
   g. Fried bacon

7. Preparing simple lunches
    a. Sandwich with lunch meat
    b. Sandwich with cheese
    c. Sandwich with filling (egg salad, tuna salad)
    d. Fruit
        1) Canned
        2) Fresh
    e. Milk
    f. Canned soup (spaghetti, ravioli, etc.)
    g. Packing a balanced lunch in a bag
    h. Filling a thermos bottle
8. Preparing simple dinners
    a. TV dinner
    b. Canned dinners (beef stew, chili, chop suey, beans 'n franks, etc.)
    c. Canned vegetable
    d. Lettuce salad
    e. Instant mix dessert (pudding, jello)
9. Reading simple instructions on packages and cans
    a. Temperature
    b. Added ingredients
    c. How long to cook
10. Using measuring utensils
11. Choosing appropriate foods
    a. Fattening foods
    b. Non-fattening foods

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TEACHING SEVERELY HANDICAPPED STUDENTS TO USE THE TELEPHONE TO INITIATE SELECTED RECREATIONAL ACTIVITIES AND TO RESPOND APPROPRIATELY TO TELEPHONE REQUESTS TO ENGAGE IN SELECTED RECREATIONAL ACTIVITIES[1]

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Individuals labeled "severely handicapped" are so classified because of substantial impairments in intellectual and adaptive functioning (Sontag, Burke, & York, 1973). These individuals typically exhibit marked deficits in academic, motor, self-help and social skills. The current trend in providing services for severely handicapped individuals is away from large institutional settings and toward semi-independent community based living situations. Vocational training and placement of these individuals in sheltered workshop settings are essential components of many community based service models. Practitioners in the field must be concerned with providing severely handicapped individuals with skills that will facilitate successful functioning in these situations.

Currently, practitioners are developing procedures for teaching severely handicapped individuals academic, self-help, and motor skills (Brown, Bellamy, & Sontag, 1971; Brown & Sontag, 1972; Brown, Scheuerman, Cartwright, & York, 1973; Brown, Williams, & Crowner, 1974; Hamre, 1973; Dmitrev, 1972; Meyer, Blassick, & Roberts, 1973). In addition, researchers such as Gold (1972) are developing programs to equip severely handicapped individuals with selected yet marketable vocational skills. However, there is a paucity of literature dealing with necessary social skills. Seeley (1971) presents a cogent argument for the necessity of developing the social skills of severely handicapped individuals based upon the work of Goldstein (1964). Goldstein's research, conducted by means of social/vocational follow up studies, indicated that the social behavior inadequacies of severely handicapped individuals is often technical skills. That is, although many of these individuals could successfully perform job tasks, termination of employment was often the result of their inability to appropriately interact with their co-workers or employers.

more deleterious to their vocational success than specific

Since it would not be possible to predict and prepare students for all social situations they might encounter, Seeley suggests that severely handicapped individuals be taught problem solving strategies for dealing with classes of potential social situations. This position implies that in order to facilitate functioning in community based living situations, severely handicapped individuals should be equipped with social problem solving strategies.

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[1] This paper was supported in part by Grant No. OEG-0-73-6137 to the University of Wisconsin-Madison from the Department of HEW, Bureau of Education for the Handicapped, Division of Training Programs, Washington, D.C.

The purpose of this program is to delineate a procedure for teaching severely handicapped individuals skills necessary to appropriately interact with peers via the telephone. That is, to initiate and receive requests via the telephone to engage in selected recreational activities. Teaching severely handicapped individuals skills related to the use of the telephone is important, not only because it provides a means of communication in emergency situations (e.g., fires, accidents) but also because it is an important component of "normalization." That is, for most "normal" individuals the telephone is an essential means of communication and community adaptation.

Although many skills taught within the program were designed to be used with the telephone, social skills such as initiating and receiving requests to engage in social interaction, are applicable across many situations (e.g., home, school, place of employment).

Prerequisite Skills

Prior to instruction, the students were required to demonstrate selected prerequisite skills. Those skills not in the student's repertoire were taught prior to instruction on the program. The prerequisite skills are delineated below:

1. Given the cue, "Touch (dial/finger bar/cord/receiver/ear piece/or mouth piece)," the students will touch the appropriate telephone part on three consecutive occasions.

2. Given the cue, "Read this," and presented with cards bearing the printed names of classmates and teachers (last name followed by first name), the students will correctly label each card on three consecutive occasions.

3. Given the cue, "Find (_______)'s name," the students will touch the appropriate name of each of his/her classmates and teachers on his/her personal directory (See Appendix A) on three consecutive occasions.

4. Given the cue, "Dial this number," and presented with a card bearing a 7 digit telephone number, the students will correctly dial 4 different telephone numbers on three consecutive occasions.

Task Analysis

Task analysis involves operationally defining the terminal objective of a particular task, breaking that task into subobjectives (components) and then arranging those components in a sequence in such a way that: "mastery of objectives lower in the hierarchy (simpler tasks) facilitate learning of higher objectives (more complex tasks)" (Resnick, Wang and Kaplan, 1973, p. 680).

A precise task analysis facilitates the determination of prerequisite skills, i.e., skills that the students need prior to instruction on the skills delineated in the task analysis. It also facilitates the development of measures which can be used to assess which skills required by the task analysis a student can perform. That is, the students were only taught the subobjectives they did not perform during baseline measures.

The following are task analyses of the skills required in Phases I, II, III and IV:

Phase I: Teaching students to use the telephone to invite classmates and teachers to engage in selected recreational activities at the home of the caller at specified times when the target person[2] answers the telephone and either accepts or declines the invitation.

More specifically, when given a cue by a teacher to arrange for a recreational interaction, the student should perform the following series of skills:

1. Given a personal directory, students should locate the name and telephone number of a target person.
2. The student should lift the receiver.
3. The student should dial the appropriate telephone number.
4. The student should greet the person who answers with "Hello" or "Hi."
5. The student should request the target person by saying, "May I speak to (name of target person)?"
6. The student should identify him/herself with, "This is (own name)."

---

[2] The target person is the person the student wishes to ask to engage in an activity.

7. The student should make a request for the target person to engage in the recreational activity at the student's home and at a specified time by saying, "Can you (watch T.V.) at my house at (6:30)?"[3]

8. The student should respond appropriately to the target person's answer by giving a proper closing routine, i.e.,

   If the target person accepts the invitation, the student must say something indicating that the invitation had been accepted (e.g., "See you then. Goodbye," or "Good, see you there. Goodbye.").

   If the target person declines the invitation, the student must say something indicating that an invitation had been declined (e.g., "Sorry," "Maybe next time. Goodbye." or "Too bad. Goodbye.").

9. The student should hang up the receiver.

10. The student should respond correctly when the teacher asks, "Can (target person) come over?"

Phase II: Teaching students to use the telephone to invite classmates and teachers to engage in selected recreational activities at the home of the caller at specified times when a non-target person[4] answers the telephone but the target person is available and accepts or declines the invitation.

More specifically, when given the cue by a teacher to arrange for a recreational interaction, the student should perform the following series of skills.

1. Given a personal directory, students should locate the name and telephone number of the target person.
2. The student should lift the receiver.
3. The student should dial the telephone number of the target person.

---

[3] Times: Times were on the hour and the half-hour and chosen to reflect typical times the activities (e.g., dinner 6:30, sleep over 8:00) take place.

[4] A non-target person is any person other than the target person who answers the telephone.

4. The student should greet the person who answers with "Hello" or "Hi."

5. The student should request the target person by saying, "May I speak to (name of target person)."

6. The student should identify him/herself with, "This is (own name)."

7. The student should wait until the target person says "Hello."

8. The student should identify him/herself to the target person with, "This is (own name)."

9. The student should make a request for the target person to engage in an activity at the student's home at a specified time (e.g., "Can you (activity) at my house at (specified time)?").

10. The student should respond appropriately to the target person's answer by giving a proper closing routine, i.e.,

    If the target person accepts the invitation, the student must say something indicating the target person accepted the invitation (e.g., "See you then. Goodbye." or "Good, see you there. Goodbye.").

    If the target person declines the invitation, the student must say something indicating that an invitation has been declined (e.g., "Sorry, maybe next time." or "Too bad. Goodbye.").

11. The student should hang up the receiver.

12. The student should respond correctly when the teacher asks, "Can (target person) come over?"

Phase III: Teaching students to use the telephone to invite classmates and teachers to engage in six recreational activities at the home of the caller at specified times when the conditions of Phases I (target person answers) and II (non-target person answers) with the target person accepting or declining the invitations are randomly presented.

The response chains the students were required to perform were identical to the response chains delineated in Phases I and II. Certain activities[5] were always paired with the target person answering, while other activities were always paired with a non-target person answering.

Phase IV: Teaching students to properly receive, accept or decline invitations via the telephone to engage in selected recreational activities.

More specifically, given the situation where the telephone rings in a student's presence:

1. The student should pick up the receiver.
2. The student should give a proper greeting by saying "Hello" or "Hi."
3. After the caller says, "Hello, may I speak to (student)? This is (caller)," the student should identify him/herself to the caller by saying, "This is (own name)."
4. After the caller asks the student to engage in a selected recreational activity at his/her house at a selected time, the student should request the caller to wait while he/she asks permission by saying, "Please wait" or "I will ask."
5. The student should report to the control figure[6] (teacher) in another part of the room, at least the activity or place requested and correctly answer the control figure's questions regarding conditions of the request the student did not report (i.e., either time/place or time/activity). If the student could not relate to the control figure, one or more conditions of the request, it was permissible for the student to request the information from the caller.
6. The student should report to the caller whether or not he/she can accept the invitation by saying, "Yes" "Yes, I can come" or "No" "No, I cannot come."
7. The student should give the proper closing routine (e.g., "Goodbye").
8. The student should hang up the receiver.

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[5] "Activity" refers to the skills necessary to successfully request someone to engage in an activity. See "Activities" section for the activities taught in the program.

[6] "Control figure" refers to the person who has control over whether or not the student can engage in an activity outside the home (usually a parent). The teacher played the part of this person and would direct the student to either accept or decline an invitation.

Method

Students (Ss)

The 7 Ss ranged in CA from 12 to 16 years and in MA from 4 to 7 years. All Ss were enrolled in the Madison Public Schools in a self-contained classroom within a school for severely handicapped students.

Instructional Setting (See Appendix B for classroom schema)

Setting Phases I-III: The 7 Ss and a teacher (T_1) were seated around a rectangular table with one telephone. A room divider was placed between a table and a second teacher (T_2). T_2 served as the recipient of calls and held another telephone such that Ss could not see T_2. The instructional session lasted from 30-35 minutes with Ss receiving as many teaching trials as time permitted.

Setting Phase IV: The 7 Ss were seated around a rectangular table with one telephone. T_1 served as a control figure and was in Ss' sight but was not at the table. A room divider was placed between the table and T_2. T_2 functioned as the caller and held another telephone such that Ss could not see T_2. The instructional session lasted 30-35 minutes with Ss receiving as many instructional trials as time permitted.

Materials

The materials used throughout all phases included:

1. Personal directories with the names (last followed by first) and telephone numbers of teachers and each class member (See Appendix A).
2. A teletrainer or two standard desk telephones connected to a drycell battery (See Appendix C).
3. Data sheets (See Appendix D).
4. Graphs (See Appendix E).
5. A room divider.

Activities (Act.)

The activities used in the program were as follows:

Phase I: Activity 1: eating dinner
Activity 2: sleeping overnight
Activity 3: watching T.V.

Phase II: Activity 4: going for a walk
Activity 5: listening to records
Activity 6: playing cards

Phases III & IV: Activities 1-6.

Program Design

The program employed a test-teach design throughout. That is, the terminal objective for each phase was pre-tested and if necessary taught to criterion.

In addition, a Multiple-Time-Series design (Campbell & Stanley, 1963) was utilized in an attempt to measure the acquisition of learning sets and maintenance of criterion performance on Activities 1, 2 and 3 taught within Phase I.[7] According to Campbell and Stanley:

> "The essence of a time-series design is the presence of a periodic measurement process on some group or individual and the introduction of an experimental change into this time-series of measurement, the results of which are indicated by a discontinuity in the measurements recorded in the time-series." (p. 37)

Using Campbell and Stanley's notation, this design may be depicted as follows:[8]

$$\begin{array}{lllllll} O_{Ia} & X_{I} & O_{Ib} & & O_{Ic} & & O_{Id} \\ O_{IIa} & & O_{IIb} & X_{2} & O_{IIc} & & O_{IId} \\ O_{IIIa} & & O_{IIIb} & & O_{IIIc} & X_{3} & O_{IIId} \end{array}$$

Using the notation of this program:

---

[7] White, 1973, p. 83 defines a learning set as: "The resultant increase in the facility with which new but related discrimination problems may be solved (i.e., new but related discrimination paradigms come to control behavior more rapidly than preceding related or new unrelated discriminations). It is said that the organism "learns to learn."

[8] 0 = test (observation); X = instruction (intervention).

Pre-test	Teach	Retest 1	Teach	Retest 2	Teach	Retest 3
Act. 1	Act. 1	Act. 1		Act. 1		Act. 1
Act. 2		Act. 2	Act. 2	Act. 2		Act. 2
Act. 3		Act. 3		Act. 3	Act. 3	Act. 3

This design lessens the probability that events other than instruction (i.e., historical events, maturation, instrumentation, testing, regression, and interaction of testing and treatment) will determine the program results.[9] In addition, it yields information on the acquisition of learning sets and on the long and short term maintenance of Activities 1, 2 and 3. Savings in trials to criterion across instructional segments and/or an increase in the number of correct responses across tests would suggest that learning sets were acquired. Maintenance is demonstrated by a continuing correct performance on retest(s) of an activity.

In this program measures of short term and long term maintenance were obtained. Short term maintenance was measured by retesting an activity on the first trial after instruction to criterion. That is, short term maintenance of Activity 1 was assessed in Retest #1, Activity 2 in Retest #2 and Activity 3 in Retest #3. Long term maintenance was measured by retesting an activity subsequent to criterion performance on another activity. That is, long term maintenance of Activity 1 was assessed in Retest #2 and Retest #3, and long term maintenance of Activity 2 was assessed in Retest #3.

Instructional Sequence

The skills required by the program were tested and taught in the following sequence:

1. The skills required in the terminal objective of Phase I were tested.
2. The skills required in the terminal objective of Phase II were tested.
3. The skills required in the terminal objective of Phase III were tested.
4. The skills required in Phase I, Activity 1 when TP accepted the invitation were taught.

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[9] See Campbell and Stanley (1963) pp. 37-38, 55-56 for further information on time-series and multiple time-series designs.

5. The skills required in Phase I, Activities 1, 2 and 3 when TP accepted the invitation were retested.

6. The skills required in Phase I, Activity 2 when TP accepted the invitation were taught.

7. The skills required in Phase I, Activities 1, 2 and 3 when TP accepted the invitation were retested.

8. The skills required in Phase I, Activity 3 when TP accepted the invitation were taught.

9. The skills required in Phase I, Activities 1, 2 and 3 when TP accepted the invitation were retested.

10. The skills required in Phase I, Activities 1, 2 and 3 when TP accepted the invitation were taught.

11. The skills required in Phase I, Activities 1, 2 and 3 when TP declined the invitation were taught.

12. The skills required in Phase I, Activities 1, 2 and 3 when TP accepted or declined the invitation were taught.

13. The skills required in Phase II, Activities 4, 5 and 6 when TP accepted or declined the invitation were taught.

14. The skills required in Phase III, Activities 1-6 when TP accepted or declined the invitation were taught.

15. The terminal objective of Phase IV was tested.

16. The skills required in Phase IV when S received and accepted the invitation were taught.

17. The skills required in Phase IV when S received and declined the invitation were taught.

18. The skills required in Phase IV when S received, accepted or declined the invitation were taught.

Definition of Instructional Procedures

The basic procedures used during instruction are described below:

Modeling - Modeling has been defined as "the training technique or operation of demonstrating a response or chain of responses to a subject and then directing the subject to immediately imitate the performance." (White, 1971, p. 96) Modeling was used to teach selected verbal and nonverbal responses.

Priming (or prompting) - Priming is the procedure of guiding S physically through a response or response sequence. Priming was used to teach selected nonverbal behaviors.

Fading - Fading refers to a process of gradually changing the stimuli controlling a response until the response is controlled by different stimuli. Physical prompts were faded by gradually withdrawing T's physical guidance; e.g., if on ensuing trials S did not lift the receiver after T's model, T would initially guide S's hand all the way through the lifting of the receiver, then only to the point where S's hand touched the receiver. That is, S was gradually required to perform more of the responses unaided. Models were faded by gradually presenting a less demonstrative model. That is, if S correctly performed all the responses in Phase I up to the point where S was to identify himself, T would model the entire response, e.g., "This is Tom." Later, T's model would be shortened to, "This is ___," then to "This __ ___," requiring S to successively perform more of the response without teacher assistance.

Chaining - A forward chaining procedure was used throughout the program. "Forward chaining is a teaching tactic where the first component in a chain of responses is established in the repertoire first, then the next is added, etc., until the entire chain has been acquired." (White, 1971, p. 18)

Rehearsal - Ss were required to emit six or seven word verbal chains. For Ss who failed to do this in response to several modeled cues a rehearsal strategy was employed. Rehearsal, as used here, involved T verbalizing the verbal response chains in unison with S. For example, T and S would repeat two or three times in unison, "Can you eat dinner at my house" then S would be directed to imitate the utterance. The rehearsal was then faded. That is, successively shorter portions of the verbal response chain were spoken by T, (e.g., "Can you eat dinner at ___________" to "Can you ____________ ___________________").

Basic Procedures

The objectives of each phase required Ss to emit a chain of responses correctly and in sequence. The same teaching and behavioral measurement procedures were utilized across phases. These teaching and measurement procedures were incorporated into a test-teach-test design. That is, T presented the response cue, S then proceded through the chain of responses until he/she either completed the entire chain of responses correctly and in sequence or errored (emitted an incorrect response or a response out of sequence). T scored a plus for each response S emitted correctly and in sequence. If S successfully completed the chain, he/she was rewarded with verbal praise. If S errored, T said, "No" to terminate responding and scored a minus at the point of error. T then modeled the correct response beginning with the last response performed correctly through the response missed in order that the last correct response would be chained to the next response to be emitted. Next, T repeated the response cue for S to imitate the model. If an incorrect response was verbal and if S failed to imitate the subsequent model, the model was repeated until S made at least an approximation of the correct response. The models and priming cues were gradually faded until S emitted the chain of responses given only the initial cue. For some Ss a rehearsal procedure was utilized in addition to modeling and priming.

Specific Instructional and Measurement Procedures

1. Pre-test of the skills required in the terminal objective of Phase I.

1a. Phase I Pre-test Activities 1, 2 and 3 when TP answers the telephone and accepts the invitation.

	Cue	Response	Materials
A.	T says, "You want to call (TP) and ask him/her to (1. eat dinner/ 2. sleep over/ 3. watch T.V.) at your house at (time)." T scores a "plus" (+) for each response S performs correctly and in sequence and a "minus" (-) for each response S performs incorrectly or out of sequence. T allows S to continue until S stops responding or completes the response chain and then says, "Thank you."	S proceeds as far as he/she can through the response chain 1-10. (See Phase I in the Task Analysis section above)	Teletrainer. Personal directory. Data sheet. Room divider.

Decision Rule: Administer pre-test 1b only if on the pre-test 1a S correctly performs all the responses in the chain through Step 10 (requesting TP to engage in the selected activity at their home at the specified time).

1b. Pre-test Phase I, Activities 1, 2 and 3 when TP answers the telephone and declines the invitation.

The procedure is identical to that in 1a except that TP declines the invitation.

2. Pre-test of the skills required in the terminal objective of Phase II.

2a. Pre-test Phase II, Activities 4, 5 and 6 when a non-target person (non-TP) answers the telephone and TP accepts the invitation.

	Cue	Response	Materials
A.	T says, "You want to call (TP) and ask him/her to (4. go for a walk/ 5. listen to records/6. play cards) at your house at (time)." T scores a "plus" (+) for each response S performs correctly and in sequence and a "minus" (-) for each response S performs incorrectly or out of sequence. T allows S to continue until S stops responding or completes the response chain. T then says, "Thank you."	S proceeds as far as he/she can through the response chain 1-12 (See Phase II in the Task Analysis section above).	

Decision Rule: Administer pre-test 2b only if on pre-test 2a S correctly performs all the responses in the chain through Step 11 (requesting TP to engage in the selected activity at their home at the specified time).

2b. Pre-test Phase II, Activities 4, 5 and 6 when a non-TP answers the telephone and TP declines the invitation.

The procedure is the same as in 2a above.

Decision Rule: Go to Phase III pre-test only if S completes the pre-tests for Phases I and II without error.

3. Pre-test the skills required in the terminal objective of Phase III. Activities 1-6 were tested; Activities 1, 3 and 5 with TP accepting the invitation; Activities 2, 4 and 6 with TP declining the invitation.

	Cue	Response	Materials
A.	T says, "You want to call (TP) and ask him/her to (1. eat dinner/ 2. sleep over/ 3. watch T.V./ 4. go for a walk/5. listen to records/6. play cards) at your house at (time)."	S proceeds as far as he can through either response chain 1-10 (for Phase I activities) or response chain 1-12 (for Phase II activities) (See Task Analysis section above).	
	T_1 scores a "plus" (+) for each response S performs correctly and in sequence and a "minus" for each response S performs incorrectly or out of sequence. T_1 allows S to continue until S stops responding or completes the response chain. T_1 then says "Thank you."		

Instruction was carried out only on activities failed during baseline.

4. Teach Phase I, Activity 1: Eating dinner, TP accepts.

Step 1 - Teaching *Ss* to locate name of *TP* from their directory.

	Cue	*Response*	*Materials*
A.	T_1 places the telephone in front of *S* with the directory on the opposite side of the phone from *S*'s dialing hand.[10] T_1 says, "You want to call (*TP*) and ask him/her to *eat dinner* at *your house* at (*time*)."[11] If correct T_1 scores a "+" and allows *S* to continue the response chain (Step 2 ...).	If *S* touches the name of the *TP* on the directory with his/her non-dialing hand, *S* may continued the response chain (Step 2 ...). If *S* errors, go to "B."	Teletrainer. Personal directory. Room divider. Data sheet.
B.	If incorrect, T_1 says "No," scores a "-" at the point of *S*'s error and says, "You want to call (*TP*) and ask him/her to *eat dinner* at your *house* at (*time*), touch *his* name." T_1 then models touching the correct name and says, "Here's (*TP*'s) name." T_1 repeats the original cue.	If *S* correctly imitates the model the trial is terminated. If *S* fails to imitate the model go to "C."	
C.	If incorrect, T_1 repeats the original cue and primes		

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[10] The dialing hand was *S*'s writing hand.

[11] This will be referred to as the "original cue" throughout Phases I-III.

Cue	Response	Materials
S through the correct response (touching of TP's name on the directory with S's non-dialing hand).		

Step 2 - Teaching Ss to locate the telephone number of TP from their directory.

Cue	Response	Materials
A. T_1 places the telephone in front of S with the directory on the opposite side of the phone from S's dialing hand and gives the original cue. If correct, T_1 scores a "+" for each correct response and allows S to continue response chain (Step 3 ...).	If S touches the name and then the telephone number of the TP on the directory with his/her non-dialing hand, S may continue the response chain (Step 3 ...). If S errors, go to "B."	Teletrainer. Personal directory. Room divider. Data sheet. (The materials will be the same throughout Phases I-III.)
B. If incorrect, T_1 says "No," scores "-" at the point of S's error, repeats the original cue and models the correct responses beginning with the last response in the chain performed correctly by S (i.e., touching TP's name) and says, "This is TP's name and number." T_1 then repeats the original cue.	If S correctly imitates the model the trial is terminated. If S fails to imitate the model go to "C."	

Cue	Response	Materials
C. If incorrect, T_1 repeats the original cue and primes S through touching the TP's name and number.		

Step 3 - Teaching Ss to pick up the receiver.

Cue	Response	Materials
A. T_1 places the telephone in front of S with the directory on the opposite side of the phone from S's dialing hand and gives the original cue. If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 4 ...).	If S touches the TP's name and number on the directory with his/her non-dialing hand and picks up the receiver with his/her dialing hand S may continue the response chain (Step 4 ...). If S errors, go to "B."	Same as above.
B. If incorrect, T_1 says "No," scores a "-" at the point of S's error, repeats the original cue and models the correct responses beginning with the last response in the chain performed correctly by S (touching TP's telephone number). T repeats the original cue.	If S correctly imitates the model the trial is terminated. If S fails to imitate the model go to "C."	
C. If incorrect, T_1 repeats the original cue, and primes S through the correct response.		

Step 4 - Teaching Ss to dial TP's number.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S as above. T_1 then gives the original cue. If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 5 ...).	If S locates TP's name and number from the directory with his/her non-dialing hand, lifts the receiver with his/her dialing hand and dials the number correctly, placing the receiver to his/her ear after dialing, (S may place receiver on table after lifting, or may dial with receiver in hand - T always modeled dialing with receiver on table) S may continue the response chain (Step 5 ...). If S errors go to "B."	Same as above.
B.	If incorrect, T_1 says "No," then scores a "-" at the point of S's error, repeats the original cue and models the correct response, (saying aloud each number as he/she dials) beginning with the last response in the chain performed correctly by S, (picking up the receiver). T_1 repeats the original cue.	If S correctly imitates the model the trial is terminated. If S fails to imitate the model go to "C."	

	Cue	Response	Materials
C.	If incorrect, T_1 repeats the original cue and primes *S* through the correct response.		

Step 5 - Teaching *Ss* to greet the person who answers the telephone.

	Cue	Response	Materials
A.	T_1 places the telephone in front of *S* as above. T_1 then gives the original cue.	*S* locates the *TP*'s name and number, lifts the receiver, dials the number and places the telephone to his/her ear (as above).	Same as above.
B.	T_2 lifts the receiver and says "Hello." If correct, T_1 scores a "+" for each correct response and allows *S* to continue the response chain (Step 6 ...).	If *S* says "Hello" or "Hi" or other similar greeting, *S* may continue the response chain (Step 6 ...). If *S* errors go to "C."	
C.	If incorrect, T_1 scores a "-" at the point of *S*'s error and says, "No, you must say hello when someone says hello." T_1 then gives the original cue and models the correct responses beginning with the last response in the chain performed correctly by *S* (dialing). T_1 repeats original cue.	If *S* correctly imitates the model the trial is terminated. If *S* fails to imitate the model, go to "D."	
D.	If incorrect, T_1 models the correct response until *S* at least approximates the model.	When *S* correctly imitates or approximates the model, the trial is terminated.	

Step 6 - Teaching *Ss* to request *TP*.

	Cue	*Response*	*Materials*
A.	T_1 places the telephone in front of *S* as above. T_1 then gives the original cue.	*S* locates *TP*'s name and number, lifts the receiver, dials the number and places the telephone to his/her ear.	Same as above.
B.	T_2 picks up the receiver and says "Hello." If correct, T_1 scores a "+" for each correct response and allows *S* to continue the response chain (Step 7 ...).	If *S* says "Hello, may I speak to *TP*," or similar request, *S* may continue the response chain (Step 7 ...). If *S* errors go to "C."	
C.	If incorrect, T_1 says, "No, you must ask for *TP*." T_1 scores a "-" at the point of *S*'s error. The phone behind the divider rings, T_2 says "Hello," and T_1 models the correct responses beginning with the last response in the chain performed correctly by *S*, (saying hello). T_1 repeats original cue.	If *S* correctly imitates the model the trial is terminated. If *S* fails to imitate the model go to "D."	
D.	If incorrect, T_1 models the correct response until *S* at least approximates the model.	When *S* correctly imitates or approximates the model the trial is terminated.	

Step 7 - Teaching *Ss* to identify themselves.

	Cue	Response	Materials
A.	T_1 places the telephone in front of *S* as above. T_1 then gives the original cue.	*S* locates the *TP*'s name and number, picks up the receiver and dials the number.	Same as above.
B.	T_2 lifts the receiver and says "Hello." If correct, T_1 scores a "+" for each correct response and allows *S* to continue the response chain (Step 8 ...).	If *S* says "Hello, may I speak to *TP*, this is *(own name)*," *S* may continue the response chain (Step 8 ...). If *S* errors, go to "C."	
C.	If incorrect, T_1 said, "No, you must tell *TP* your name," T_1 scores a "-" at the point of *S*'s error, repeats the original cue, then models the correct responses beginning with the last response in the chain performed correctly by *S* (requesting *TP*). T_1 repeats the original cue.	If *S* correctly imitates the model the trial is terminated. If *S* fails to imitate the model go to "D."	
D.	If incorrect, T_1 models the correct responses until *S* at least approximates the model.	When *S* correctly imitates or approximates the model the trial is terminated.	

Step 8 - Teaching *Ss* to make a request for *TP* to engage in a selected recreational activity - eating dinner.

	Cue	Response	Materials
A.	T_1 places the telephone in front of	*S* locates the *TP*'s name and number,	Same as above.

	Cue	Response	Materials
	S as above. T_1 then gives the original cue.	lifts receiver, and dials the number.	
B.	T_2 lifts the receiver and says "Hello."	S says "Hello, may I speak to TP. This is (own name)."	
C.	T_2 says, "This is TP." If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 9 ...).	If S says, "Can you eat dinner," (or similar statement) S may continue the response chain (Step 9 ...). If S errors, go to "D."	
D.	If incorrect, T_1 says "No," scores a "-" at the point of S's error, and models the correct response beginning where T_2 says, "This is TP."	If S correctly imitates the model the trial is terminated. If S fails to imitate the model, go to "E."	
E.	If incorrect, T_1 models the correct responses until S at least approximates the model.	When S correctly imitates or approximates the model the trial is terminated.	

Step 9 - Teaching Ss to make a request for TP to engage in a selected recreational activity (eating dinner) at their home.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S as above, and gives the original cue. If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 10 ...).	If after correctly proceeding through responses in Steps 1-7, S says, "Can you eat dinner at my house?" S may continue the response chain (Step 10 ...). If S errors, go to "B."	Same as above.

Cue	Response	Materials
B. If incorrect, T_1 says "No," scores a "-" at the point of S's error and models the correct response, beginning where T_2 says "Hello." T_1 repeats the original cue.	If S correctly imitates the model the trial is terminated. If S fails to imitate the model, go to "C."	
C. If incorrect, T_1 models the correct responses until S at least approximates the model.	When S correctly imitates or approximates T's model, the trial is terminated.	

Step 10 - Teaching Ss to make a request for TP to engage in a selected recreational activity (eating dinner) at their home at a specified time.

Cue	Response	Materials
A. T_1 places the telephone in front of S as above and gives the original cue. If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 11 ...).	If S proceeds through the responses in Steps 1-7, and then says, "Can you eat dinner at my house at (time)?" S may continue the response chain (Step 11 ...). If S errors, go to "B."	Same as above.
B. If incorrect, T_1 says "No," scores a "-" at the point of S's error and models the correct responses beginning where T_2 says "Hello." T_1 repeats the original cue.	If S correctly imitates the model the trial is terminated. If S fails to imitate the model, go to "C."	

	Cue	Response	Materials
C.	If incorrect, T_1 models the correct response until S at least approximates the model.	When S correctly imitates or approximates the model, the trial is terminated.	

Step 11 - Teaching Ss proper closing routine, when TP accepts invitation.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S as above, and gives the original cue.	S proceeds through the responses in Steps 1-10.	Same as above.
B.	T_2 says, "Yes, I can come." If correct, T scores a "+" for each correct response and allows S to continue the response chain (Step 12 ...).	If S says, "Okay, see you then - goodbye" or equivalent, S may continue the response chain (Step 12 ...). If S errors, go to "C."	
C.	If incorrect, T_1 says, "No, TP said 'yes, I can come.' If he says 'yes, I can come,' you say 'See you then.'" T_1 scores a "-" at the point of S's error and then models the correct responses beginning with the last response in the chain performed correctly by S (requesting TP to engage in activity at his/her house at specified time). T_1 repeats the original cue.	If S correctly imitates the model, the trial is terminated. If S fails to imitate the model, go to "D."	

	Cue	Response	Materials
D.	If incorrect, T_1 models the correct responses until S at least approximates T's model.	When S correctly imitates or approximates the model, the trial is terminated.	

Step 12 - Teaching Ss to hang up the receiver.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S as above and gives the original cue. If correct, T scores a "+" for each correct response and allows S to complete the response chain (Step 13).	If S performs all the responses in Steps 1-11 correctly, then hangs up the receiver, S may complete the response chain (Step 13). If S errors, go to "B."	Same as above.
B.	If incorrect, T_1 says, "No, you must hang up when you're done," and scores a "-" at the point of S's error. T_1 then models the correct responses from last correct response performed in sequence by S (closing routine). T_1 repeats the original cue.	If S correctly imitates the model, the trial is terminated. If S fails to imitate the model, go to "C."	
C.	If incorrect, T_1 primes S through the correct response.		

Step 13 - Teaching Ss to verbally relate whether or not TP accepted the invitation.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S as above and gives the original cue.	S performs the responses in Steps 1-12.	Same as above.

	Cue	Response	Materials
B.	T_1 asks, "Can TP come over?" If correct, T_1 verbally praises S and scores a "+" for each correct response.	If S answers correctly (e.g., "yes," or "yes, he/she can") go to "C." If S errors, go to "D."	
C.	If incorrect, T_1 says "No," scores a "-" at the point of S's error and has T_2 repeat, "Yes, I can come," T_1 then asks, "Can TP come?"	If S responds correctly, the trial is terminated. If S errors, go to "E."	
D.	If incorrect, T_1 repeats "C" until S responds correctly.	When S responds correctly the trial is terminated.	

Criterion: 3 consecutive correct complete response chains (Steps 1-13).

5. Retest #1, Phase I. Activities 1, 2 and 3, TP accepts the invitation. The procedure is identical to that of the original pre-test (See "1a" above).

   Decision Rule: Teach only those activities S failed. If S tested out of any or all activities, T omitted instruction on those activities.

6. Teach Phase I, Activity 2. Sleeping overnight, TP accepts the invitation. The teaching procedure is identical to "2" above.

7. Retest #2, Phase I. Activities 1, 2 and 3, TP accepts the invitation. The procedure is identical to the original pre-test (See "1a" above).

   Decision Rule: Teach only those activities which S failed during baseline.

8. Teach Phase I, Activity 3. Watching T.V., TP accepts the invitation. The procedure is identical to that of "2" above.

9. Retest #3, Phase I. Activities 1, 2 and 3, TP accepts. The procedure is identical to that of "1a" above.

Decision Rule: If S failed any or all activities, go to "10." If S made no errors, go to "11."

10. Teach any activities (eat dinner, sleep overnight, watch T.V.) S failed during retest #3, TP accepts. Teaching procedure is identical to "4" above.

11. Teach Phase I, Activities 1, 2 and 3. TP declines the invitation, Steps 1-10 are taught in the same manner as in "4" above.

Step 11 - Teaching Ss proper closing routine when TP declines the invitation.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S as above and says, "You want to (1. eat dinner/ 2. sleep over/3. watch T.V.) at your house at (time)."	S performs all the responses in Steps 1-10 ("Can you eat dinner/sleep over/ watch T.V. at my house at (time)?").	Teletrainer. Personal directory. Room divider. Data sheet.
B.	T_2 says, "No, I cannot come." If correct, T scores a "+" for each correct response and allows S to continue the response chain (Step 12 ...).	If S says, "Sorry, maybe next time, goodbye" or "Too bad, goodbye" (or similar response) S may continue the response chain (Step 12). If S errors, go to "C."	
C.	If incorrect, T_1 says, "No, TP said 'No, I cannot come.' If he says 'No,' we say 'Sorry, maybe next time.'" T_1 scores a "-" at the point of S's error, then models the correct response beginning with the last response in the chain performed correctly by S (Step 10.	If S correctly imitates T's model, the trial is terminated. If S fails to imitate the model, go to "D."	

	Cue	Response	Materials
D.	T_1 models the correct response until S at least approximates the model.	When S correctly imitates or approximates the model, the trial is terminated.	

Steps 12-13 (hanging up and reporting) are identical to "2" (Steps 12 and 13).

Criterion: 3 consecutive correct response chains (Activities 1-3, TP declines).

12. Teach Activities 1, 2 and 3. TP accepts or declines the invitation. Use the same procedures used as outlined above.

Criterion: 5 of 6 correct response chains (Activities 1-3, each accepted and declined).

13. Teach the skills required in Phase II, Activities 4, 5 and 6. TP accepts or declines the invitation. Teaching procedures for Steps 1-7 are identical to those for Steps 1-7 in "4" above.

Step 1 - Teaching Ss to locate TP's name.

Step 2 - Teaching Ss to locate TP's telephone number.

Step 3 - Teaching Ss to lift the receiver.

Step 4 - Teaching Ss to dial the number.

Step 5 - Teaching Ss to greet the party on line (non-target person in Phase II)[12]

Step 6 - Teaching Ss to request TP.

Step 7 - Teaching Ss to identify themselves to the person who answers the telephone (Phase II differed from Phase I on Step 8).

Step 8 - Teaching Ss to identify themselves when TP comes to the telephone.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S with the directory on the opposite side of phone from S's dialing hand, and says,	S locates TP's name and number, lifts the receiver, dials the correct number and places the receiver to his/her ear.	Teletrainer. Personal directory. Room divider. Data sheets.

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[12] "Non-target person" is abbreviated to non-TP.

	Cue	Response	Materials
	"You want to call (TP) and ask him/her to eat dinner at your house at (time)."		
B.	T_2 lifts up the receiver and says "Hello."	S says, "Hello, may I speak to TP, this is (S)."	
C.	T_2 says, "Just a minute, I'll go get him/her."	S says nothing until TP greets him/her.	
D.	TP says "Hello" or similar greeting. If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain.	If S says, "This is (S)," S may continue the response chain (Step 9 ...). If S errors, go to "E."	
E.	If incorrect, T_1 says, "No, did TP answer the telephone first? No, he didn't." T_1 then scores a "-" at the point of S's error and models the correct response beginning where T_2 says, "I'll go get him/her." T_1 repeats the original cue.	If S imitates the model correctly the trial is terminated. If S fails to imitate the model, go to "F."	
F.	If incorrect, T_1 performs the correct response until S at least approximates the model.	When S correctly imitates or approximates the model the trial is terminated.	

The remaining steps are identical to the remaining steps in Phase I. See "4" above.

Criterion: The above procedures were followed until S performed the entire response chain correctly for the 3 activities, each accepted and declined on 5 of 6 trials.

14. Teach Phase III, Activities 1-6. (Random presentations of the response requirements in Phases I and II) when TP accepted or declined the invitation. The same teaching procedures for the respective phases were used as described above.

Criterion: The above procedures were followed until S performed the entire response chain correctly for the 6 activities presented in random order on 5 of 6 trials (TP answered for activities 1-3, non-TP answered for activities 4-6. TP's accepting or declining the invitation non-randomly varied).

15. Pre-test the Terminal Objective for Phase IV (Recipient Phase): Four activities were pre-tested, 1. listen to records, 2. sleep over, 3. play cards, and 4. eat dinner. 1 and 2 were accepted by S, 3 and 4 were declined.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S and instructs S to answer it if it rings. T_1 moves to another part of the room but remains within the students' sight. The telephone then rings.	S proceeds as far as he can through the response chain 1-8 (See Phase IV in the Task Analysis section above).	Teletrainer. Room divider. Data sheet.
B.	T_1 scores a "+" for each correct response S performs correctly and in sequence and a "-" for each response S performs incorrectly or out of sequence. T_1 allows S to continue until S stops responding or completes the response chain. T_1 then says, "Thank you."		

Decision Rule: Teach only those situations (S accepts invitation or S declines invitation) failed on during baseline.

16. Teach the skills required in Phase IV when S receives and accepts invitations to engage in selected recreational activities.

Step 1 - Teaching Ss to pick up the receiver.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S and instructs S to answer it if it rings. T_1 moves to another part of the room but remains within the student's sight. The telephone then rings. If correct, T_1 scores a "+" and allows S to continue the response chain (Step 2 ...).	If S picks up the receiver, S may continue the response chain (Step 2 ...). If S errors, go to "B."	Teletrainer. Room divider. Data sheet. (The materials will be the same throughout Phase IV.)
B.	If incorrect, T_1 says, "No, when the phone rings, pick up the receiver," T_1 scores a "-" at the point of S's error. The telephone rings and T_1 models correct response. The telephone rings again.	If S correctly imitates the model, the trial is terminated. If S fails to imitate the model, go to "C."	
C.	If incorrect, T_1 primes S through the correct response.		

Step 2 - Teaching Ss to greet the caller.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S and instructs S to answer it if	If S picks up the receiver and says "Hello," S may continue the	Same as above.

	Cue	Response	Materials
	it rings. T_1 moves to another part of the room as before and the telephone rings. If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 3 ...).	response chain (Step 3 ...). If S errors, go to "B."	
B.	If incorrect, T_1 says, "No, when the telephone rings, you pick up the receiver and say 'Hello.'" T_1 scores a "-" at the point of S's error, then models the correct response beginning with the last response in the chain performed correctly by S (picking up the receiver). The telephone rings again.	If S correctly imitates the model, the trial is terminated. If S fails to imitate the model, go to "C."	
C.	If incorrect, T_1 primes S through the correct response.		

Step 3 - Teaching Ss to identify themselves.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S and instructs S to answer it if it rings. T_1 moves to another part of the room and the telephone rings.	S picks up the receiver and says "Hello."	Same as above.
B.	T_2 says, "Hello, may I speak to (S), this is (own name)." If correct, T_1 scores a	If S says, "This is (S)," S may continue the response chain	

	Cue	Response	Materials
	"+" for each correct response and allows S to continue the response chain (Step 4 ...).	(Step 4 ...). If S errors, go to "C."	
C.	If incorrect, T_1 says, "No, when he asks for you, you say 'This is (S).'" T_1 scores a "-" at the point of S's error and models the correct response in the chain performed correctly by S. The telephone then rings.	If S correctly imitates the model, the trial is terminated. If S fails to imitate the model, go to "D."	
D.	If incorrect, T_1 models the correct response until S at least approximates the model.	When S correctly imitates or approximates the model, the trial is terminated.	

Step 4 - Teaching Ss to ask the caller to wait while S asks permission from the control figure to engage in the activity.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S and instructs S to answer it if it rings. T_1 then moves to another part of the room and the telephone rings.	S picks up the receiver and says "Hello."	Same as above.
B.	T_2 says, "Hello, may I speak to (S)."	S says, "This is (S)."	
C.	T_2 says, "Can you (activ. 1-6) at my house at (time)?" If correct, T_1	If S says, "Wait a minute" or "I'll go ask" (anything indicating they	

	Cue	Response	Materials
	scores a "+" for each correct response and allows S to continue the response chain (Step 5 ...).	will ask permission or for initiator to wait) S may continue the response chain (Step 5 ...). If S errors, go to "D."	
D.	If incorrect, T_1 says, "No, you have to tell (caller) to wait." T_1 then models the correct response beginning with the last response in the chain performed correctly by S. The telephone rings.	If S correctly imitates the model, the trial is terminated. If S fails to imitate the mode, go to "E."	
E.	If incorrect, T_1 models the correct response until S at least approximates the model.	When S correctly imitates or approximates the model, the trial is terminated.	

Step 5 - Teaching Ss to report to the control figure (T_1), the activity S was asked to engage in, its time and place.

	Cue	Response	Materials
A.	T_1 places the telephone in front of S and instructs S to answer it if it rings. T_1 then moves to another part of the room and the telephone rings.	S performs responses in Steps 1-4 then S goes to control figure (T_1) in another part of the room and gives either: 1) the name of the activity invited to (e.g., "go activity") or 2) the name of the place (e.g., "go (caller's) house"	Same as above.

Cue	Response	Materials
	(minimum information accepted as correct response).	
B. Depending on whether S reports the activity or the place, T_1 (control figure) asks questions to ascertain the remaining information.		
1) if activity is reported, T_1 asks, "where, what time."	1) if S responds "(caller's) house, (time)" (e.g., 6:30 tonight) S may continue the response chain (Step 6 ...).	
2) if the place is reported, T_1 asks, "What are you going to do?" "What time?" If correct, T scores a "+" for each correct response and allows S to continue the response chain (Step 6 ...).	2) if S responds "(activity)" (e.g., "dinner") "(time)" (e.g., "tonight 6:30") S may continue the response chain (Step 6 ...).	

Note: Ss were allowed to ask caller for any information (time, activity, place) they may have forgotten and still be credited with a correct response. If Ss could not respond to T's questions, T said, "What can you do?" S then had to ask the caller for the desired information.

Cue	Response	Materials
C. If incorrect, T_1 scores a "-" and says "Listen." T_2 repeats the information	If S relates the correct information trial is terminated. If incorrect, go to "D."	

	Cue	Response	Materials
	(activity, time, and/or place) that S failed to report. T_1 then repeats the questions.		
D.	If incorrect, T_1 repeat "C" until S makes the correct response.	When S relates the correct information to T_1, the trial is terminated.	

Step 6 - Teaching Ss to report to the caller that he/she can accept the invitation.

	Cue	Response	Materials
A.	Same as above through Step 5. Then T_1 (control figure) says to S, "Tell (caller) yes, you can come." If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 7 ...).	If S performs all the responses in Steps 1-5 and then tells the caller "yes" or "yes, I can come" S may continue the response chain (Step 7 ...). If S errors, go to "B."	Same as above.
B.	If incorrect, T_1 says, "No," scores a "-" at the point of S's error and models the correct response.	If S correctly imitates the model, the model, the trial is terminated. If S fails to initate the model, go to "C."	
C.	If incorrect, T_1 models the correct response until S at least approximates the model.	When S correctly initates or approximates the model, the trial is terminated.	

Step 7 - Teaching Ss to give the proper closing routine.

	Cue	Response	Materials
A.	Same as above through Step 6.	If S says, "See you, goodbye" or	Same as above.

	Cue	Response	Materials
	T_2 then says, "Okay, see you then." If correct, T_1 scores a "+" for each correct response and allows S to complete the response chain (Step 8).	"Goodbye" (or equivalent) allow S to complete the response chain (Step 8). If S errors, go to "B."	
B.	If incorrect, T_1 says, "No, you must say 'Goodbye,'" scores a "-" at the point of S's error and models the correct response beginning with the last response in the chain performed correctly by S (accepting the invitation).	If S correctly imitates the model, the trial is terminated. If S fails to imitate the model, go to "D."	
C.	If incorrect, T models the correct response until S at least approximates T's model.	When S correctly imitates or approximates T's model, the trial is terminated.	

Step 8 - Teaching Ss to hang up the receiver.

	Cue	Response	Materials
A.	Same through Step 6.	If S performs all the responses in Steps 1-6 and then hangs up the receiver, go to "B." If S errors, go to "C."	Same as above.
B.	If correct, T_1 verbally praises S and scores a "+" for each correct response.		
C.	If incorrect, T_1 says, "No, you must hang up the receiver," scores	If S imitates the model correctly, the trial is terminated. If S	

Cue	Response	Materials
a "-" at the point of S's error and models the correct response beginning with the last response in the chain performed correctly by S ("goodbye").	fails to imitate the model, go to "D."	
D. If incorrect, T_1 primes S through the correct response (hanging up receiver).		

Criterion: The above procedure was followed until S performed the entire response chain correctly on 3 consecutive trials (Activities 1-6 were randomly presented).

17. Teaching the skills in Phase IV when S receives and declines invitations to engage in selected recreational activities.

Steps 1-5 were taught using the same teaching procedures as those in "16" above.

Step 6 - Teaching Ss to report to the caller that he/she must decline the invitation.

Cue	Response	Materials
A. T_1 places the telephone in front of S and instructs S to answer it if it rings. T_1 then moves to another part of the room but within the student's sight and the telephone rings.	S lifts the receiver, says, "Hello."	Same as above.
B. T_2 says, "Hello, may I speak to (S), this is (caller)."	S says, "This is (S)."	
C. T_2 says, "Can you (activity) at my	S says, "Just a minute," "Please	

	Cue	Response	Materials
	house at (time)?"	wait" or equivalent and asks permission from the control figure (T_1).	
D.	T_1 says, "Tell (caller) no, you cannot go." If correct, T_1 scores a "+" for each correct response and allows S to continue the response chain (Step 7 ...).	If S picks up the receiver and tells the caller, "No, I cannot go" or equivalent, S may continue the response chain (Step 7 ...). If S errors, go to "F."	
E.	If incorrect, T_1 scores a "-" at the point of S's error and says, "Tell (caller) no, you cannot go." T_1 then models the correct response.	If S picks up the receiver and tells the caller "No" or equivalent, the trial is terminated. If S errors, go to "F."	
F.	If incorrect, T_1 models the correct response until S at least approximates the model.	When S correctly imitates or approximates the model, the trial is terminated.	

Criterion: The above procedures were followed until the S correctly performed the entire response chain on 3 consecutive trials (Activities 1-6 randomly presented).

18. Teaching the skills in Phase IV when Ss receive, accept or decline invitations to engage in selected recreational activities.

The teaching procedures for the respective conditions (accepting and declining the invitation) are identical to those in "16" and "17" above.

Criterion: The above procedures were followed until the S correctly performed 4 activities consecutively correct (2 accepted, 2 declined).

RESULTS

Table 1 indicates that 4 of the 7 Ss (S_1, S_2, S_3, S_4) successfully completed the entire program. That is, 4 Ss learned to initiate requests via the telephone to engage in recreational activities when either a TP or a non-TP answered and TP accepted or declined the invitation. These Ss also learned to receive, accept and decline invitations via the telephone to engage in selected recreational activities. Of Ss who did not complete the program, S_5 was on Phase IV when the school year ended and the data accumulated to that point suggested that she would have completed the program had she not been frequently absent. It appeared that S_6 and S_7 lacked prerequisite skills for completion of the program within the time allowed. S_6 often did not attend to the instructional task and S_7 had difficulty imitating the required six and seven word utterances. The fact that S_6 and S_7 did not complete the program was probably due to the failure of the programmers to systematically develop prerequisite skills.

Table 1

Phases Completed by Ss

	Phase I	Phase II	Phase III	Phase IV
S_1	*	*	*	*
S_2	*	*	*	*
S_3	*	*	*	*
S_4	*	*	*	*
S_5	*	*	*	
S_6	*			
S_7	*			

A "*" denotes that criterion performance was attained.

Tables 2 and 3 depict data pertaining to the acquisition of learning sets and the short and long term maintenance of criterion performance of activities taught in Phase I. In order to assess if Ss developed learning sets, data which could depict a savings in trials to criterion across Activities 1, 2 and 3 are presented in Table 2 and data which could depict an increase in the percentage of responses performed correctly and in sequence across tests are presented in Table 3. Data on short and long term maintenance are presented in Table 5.

Table 2

Trials to Criterion Across
Activities 1, 2 and 3 in Phase I

Students	Activity 1	Activity 2	Activity 3
$\underline{S}_1$	34	0	0
$\underline{S}_2$	37	14	0
$\underline{S}_3$	47	6	0
$\underline{S}_4$	39	12	4
$\underline{S}_5$	32	13	0
$\underline{S}_6$	40	0	0
$\underline{S}_7$	58	12	0

A "zero" in a box indicates that an S performed at criterion on a retest of that activity.

Table 2 indicates that all Ss demonstrated a savings in trials to criterion across Activities 1, 2 and 3 suggesting that learning sets were acquired.

Table 3

Percentage of Responses Performed Correctly Across Tests in Phase I

Student	Activity	Pre-test Act. 1, 2 & 3	Teach Act. 1	Retest #1 Act. 1, 2 & 3	Teach Act. 2	Retest #2 Act. 1, 2 & 3	Teach Act. 3	Retest #3 Act. 1, 2 & 3	Teach Act. Failed in Retest #3	Retest #4
S_1	1	15.4%	CR	100%						
	2	15.4%		100%						
	3	0%		100%						
S_2	1	15.4%	CR	100%	CR	100%				
	2	0%		53.9%		100%				
	3	15.4%		53.9%		100%				
S_3	1	15.4%	CR	100%	CR	100%				
	2	15.4%		53.9%		100%				
	3	15.4%		100%		100%				
S_4	1	15.4%	CR	100%	CR	100%	CR	53.9%	CR	100%
	2	15.4%		53.9%		100%		100%		100%
	3	15.4%		53.9%		53.9%		53.9%		100%
S_5	1	15.4%	CR	100%	CR	100%				
	2	15.4%		53.9%		100%				
	3	15.4%		53.9%		100%				
S_6	1	0%	CR	100%						
	2	0%		100%						
	3	0%		100%						
S_7	1	15.4%	CR	100%	CR	100%				
	2	15.4%		53.9%		100%				
	3	15.4%		53.9%		100%				

CR indicates criterion reached.

Table 3 depicts the percentage of responses performed correctly across tests. The data shows that $\underline{S}_1$, $\underline{S}_2$, $\underline{S}_3$, $\underline{S}_5$, $\underline{S}_6$ and $\underline{S}_7$ demonstrated an increase in the percentage of responses performed correctly across tasks. This data is also interpreted as suggesting that the 6 Ss acquired learning sets.

Data on short and long term maintenance of criterion performance on previously taught activities are contained in Table 3. As defined previously, short term maintenance is criterion performance on a particular activity retested on the first trial after instruction to criterion on that activity and long term maintenance is criterion performance on a particular activity retested subsequent to intervening instruction on another activity. (Note: If an S performed at criterion on a retest of Activities 1, 2 and 3, instruction and/or retests of S's activities were unnecessary and therefore no further data on maintenance was collected.)

As depicted in Table 3, $\underline{S}_1$, $\underline{S}_2$, $\underline{S}_3$, $\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$[13] demonstrated maintenance whenever short or long term maintenance measures were obtained.

The measurement of other behaviors taught in the program were not designed in such a way as to yield information on the acquisition of learning sets or on maintenance of previously taught behaviors. However, information on skill acquisition was collected. The data on trials to criterion for each skill taught in the program is contained in Table 4. It is noteworthy that $\underline{S}_2$, $\underline{S}_3$, $\underline{S}_4$ and $\underline{S}_5$ demonstrated a savings in trials to criterion across Phases I, II and III.

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[13] $\underline{S}_4$ failed to demonstrate short term maintenance on Activity 3 during rebaseline #3 and failed to demonstrate long term maintenance of Activity 1 on rebaseline #3. Since this was the case Activities 1 and 3 were retaught to criterion and another rebaseline was administered. On this rebaseline, $\underline{S}_4$ performed all three activities 100% correctly.

Table 4

Trials to Criterion for each Skill Taught in the Program

	Phase I					Phase II	Phase III	Phase IV		
Student	Activity 1 TP Accepts	Activity 2 TP Accepts	Activity 3 TP Accepts	Activities 1, 2, 3 TP Declines	Activities 1, 2, 3 TP Accepts or Declines	Activities 4, 5, 6 TP Accepts or Declines	All Activities (1-6) TP Accepts or Declines	S Accepts	S Declines	S Accepts or Declines
S_1	34	0*	0	9	6	6	13	5	4	8
S_2	37	14	0	20	6	16	6	8	3	7
S_3	47	0	0	4	14	15	10	0	4	4
S_4	39	12	4	7	22	11	7	0	0	0
S_5	32	15	0	8	6	22	10	9	-**	
S_6	40	0	0	9	23	-	-			
S_7	58	12	0	25	9	-	-			

* A "zero" indicates that S tested out of that particular activity.

** A "minus" (-) indicates that S did not progress through this phase of the program.

Discussion

Four of the seven students ($\underline{S}_1$, $\underline{S}_2$, $\underline{S}_3$, $\underline{S}_4$) reached criterion on the skills required in the program. That is, four students learned to use the telephone to initiate selected recreational activities and to respond appropriately to telephone requests to engage in selected recreational activities. In addition, there was evidence that severely handicapped students ($\underline{S}_1$, $\underline{S}_2$, $\underline{S}_3$, $\underline{S}_5$, $\underline{S}_6$, $\underline{S}_7$) acquired learning sets across Activities 1, 2 and 3 in Phase I.

Furthermore, although data was not systematically collected subsequent to the program, it is noteworthy that all students were able to perform the behaviors taught on actual telephones and further were able to invite classmates to engage in activities not taught in the program, that is, activities they themselves generated.

While successful completion of the program will not insure the remediation of the social skill deficits of the students, it does provide them with a heretofore unavailable means of communication, the telephone.

This program might also provide a basis for the further development of programs to equip low functioning students with social skills. The skills required to initiate and receive requests for social interaction can be taught across many situations (home, school, work, etc.). In addition, other telephone related skills might be taught (See below).

Teaching students to initiate and receive requests to engage in selected recreational activities required the students' use of some of the components of problem solving skills. There are at least four basic steps involved in problem solving:

1. detecting and defining the problem
2. calling forth alternative behaviors (response chains)
3. implementing an alternative
4. assessing the outcome

In this program the students' determination of whether the target person or a non-target person had answered the telephone (Phase III) involved detection and definition of a problem (Step 1). Their implementation of a response chain involved calling forth alternative response chains (Step 2) and implementing one (Step 3). Finally, the students' answers to the teacher's questions regarding whether or not the target person had accepted their invitation required to assess the outcome (Step 4).

An extension of this program with respect to problem solving skills could include:

1. providing the student with more alternative response chains to call forth after detecting and defining the problem

2. teaching problem solving skills across situations to the point where the student, when presented with a novel situation, could errorlessly detect and define the problem and call forth and implement the correct response chain
3. teaching the student to assess the outcome of the response chain implemented without teacher assistance.

Although it was felt that the program was successfull overall, several limitations should be noted. First, criterion performance was secured only in the classroom. Since severely handicapped students typically do not demonstrate generalization across situations one limitation is that generalization across environments was neither directly taught nor measured.

A second limitation was a failure to anticipate the expressive language prerequisites of the program. For instance, $\underline{S_7}$ could not imitate the six and seven word verbal chains required. Perhaps the rehearsal procedure could have been used prior to implementation of this program to verify and if necessary teach students to imitate the required verbal chains.

The program was also limited in that it failed to teach several behaviors commonly involved in the use of the telephone. These might include the proper procedure to follow when:

1. a busy signal is reached
2. no one answers the telephone
3. a wrong number is reached
4. a non-target person answers but the target person is not available.

A fourth limitation was the uninteresting manner in which the behaviors were taught. Although the sessions as structured yielded relatively clean data, they appeared to dampen enthusiasm for the task on the part of the students and, at times, on the part of the teachers. It is suggested that the sessions be redesigned in such a way that they can be carried out in a fun "game" like fashion which would still permit accurate measurement.

In summary, it was possible to demonstrate that selected low functioning students could acquire the skills necessary to initiate and receive requests for social interaction via the telephone. In addition, some components of social problem solving skills were taught and the acquisition of learning sets was demonstrated. Such results, imply that it may be possible to teach severely handicapped individuals relatively complex social skills without having to teach them a specified repertoire of behaviors for every potential situation. It is suggested that since appropriate social and social problem solving skills are vital to successful functioning in community based living situations more effort be expended to develop procedures for teaching these skills to severely handicapped individuals.

Appendix A

Personal Directory

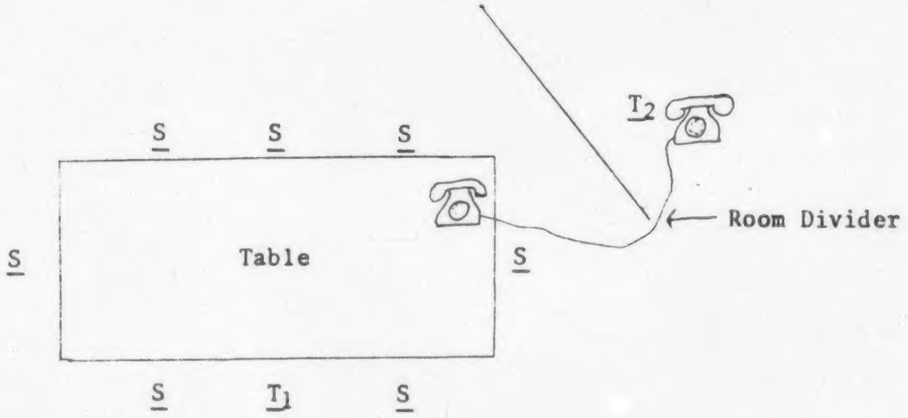
Telephone Directory

Banerd, Barb	251-1977
Dederick, Paula	238-3601
Dunlop, Betty	244-2110
Freidl, Mike	251-8083
Gemeynder, Kenny	274-7103
Harlan, Eldora	255-3825
Karston, Billy	222-5748
Stanley, Sarah	233-0216
Stanley, Rose	257-0938
Stone, Bart	244-2110
Whelly, Jill	249-4445
Williams, Wimpy	836-4935
Wirtz, Rick	238-0439

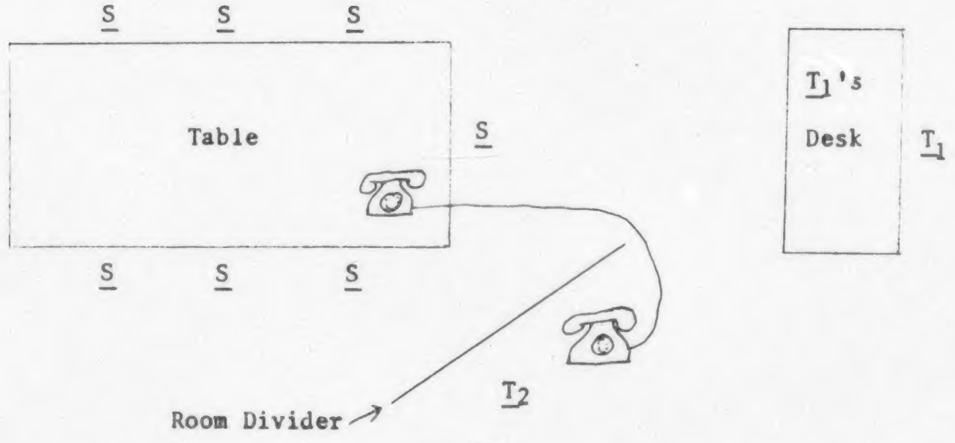
Appendix B

Instructional Arrangements

Phases I-III



Phase IV



Appendix C

At least two options exist:

1) Teletrainer - It can be borrowed from the telephone company and has two standard dial phones connected to a central control box with buttons for dial tone, busy signal and ring signal for each phone.

2) Two standard telephones connected to a dry cell battery. This also can be borrowed from the telephone company. It has no central control box and no dial tone, busy signal or ring signal. The battery operation does allow the parties on the line to be separated and still hear each other through the line.

Appendix D

Data Sheets

Data Sheets for Phases I-III

Date							
Student	$\underline{S}_1$	$\underline{S}_2$	$\underline{S}_3$	$\underline{S}_4$	$\underline{S}_5$	$\underline{S}_6$	$\underline{S}_7$
Locate Name							
Locate #							
Pick up Receiver							
Dial #							
Greet Person							
Request $\underline{TP}$							
Identify Self							
Re-identify Self when $\underline{TP}$ answers (non-TP activities)							
Make Invit. for Act.							
Place							
Time							
Approp. Closing (dep. on yes/no)							
Hang up Rec.							
Report Acc. Decl. to $\underline{T}$							
# Correct and in Sequence							
Comments							

Appendix D cont.

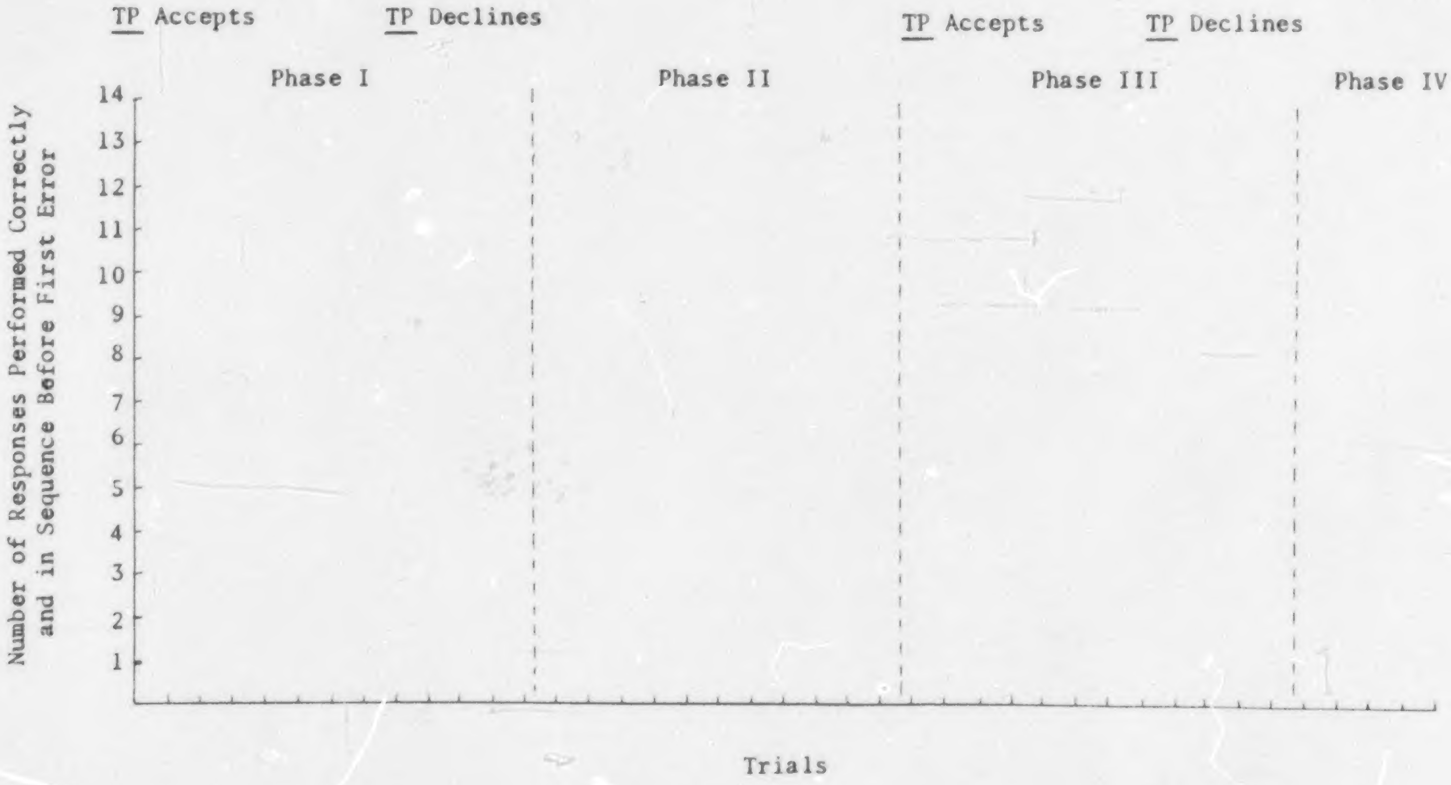
Data Sheet for Phase IV

Date	Student	Pick Up Receiver	Greeting (Hello)	Identify Self	Ask Caller To Wait	Report			Accept Or Decline	Closing	Hang Up
						Act.	Pl.	Ti.			
	$\underline{S}_1$										
	$\underline{S}_2$										
	$\underline{S}_3$										
	$\underline{S}_4$										
	$\underline{S}_5$										
	$\underline{S}_6$										
	$\underline{S}_7$										

Appendix E

Phases I-IV

TP Activities	Student	Non-TP Activities
Eat Dinner Sleep Over Watch T.V.		Go For A Walk Listen to Rec. Play Cards



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TRAINING IN CHILD MANAGEMENT: A PREVENTION ORIENTED MODEL*

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ABSTRACT

This article describes a prevention-oriented model of parent training and reports the research from the pilot study using the model. The model is designed to train parents and other family members to respond effectively to a variety of child management problems which have not, but may, occur in the family. Formerly, parent training has largely concentrated on solving presenting problems only. The model incorporates didactic instruction, role-playing, behavior-rehearsal. It also uses such devices as: video tapes, printed handouts, written and verbal exercises and weekly quizes to facilitate learning. Four criteria were used to measure success of training: knowledge of behavior principles and child management techniques; change in the "quality" of child management skill on the part of the parents; maintenance of and change in child behavior, in home management programs designed by staff and executed by parent; positive change in child behavior due to parent-designed home management programs. The measures of critical interest were measures of initiating and maintaining positive behavior changes in the child. Results were significant in each criteria category.

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Training parents in the use of behavior modification techniques has generally focused on procedures which achieve positive outcomes with specific current problems of children, e.g., aggression, temper tantrums, social withdrawal. (Wahler, 1969; Bernal, et. al., 1968; Gardner, et. al. 1968; Zielberger, 1968; Russo, 1964; Wolf, et. al., 1964; Hall, et. al. 1972; Johnson and Brown, 1969). Typically, parents are taught specific behavior management techniques (i.e., ignoring, praising, consistency) and programs for a presenting behavior problem. The programs are usually both designed by and implemented under the close supervision of professionals (Patterson, et. al., 1970).

An underlying assumption of the programs appears to be that parents who know management principles and have had some successful practice modifying, say, temper tantrums, will without professional supervision be able to design an effective program to modify future troublesome behavior with different topographies, e.g., social withdrawal. However, there is a paucity of data to support this assumption. Little attention has been given to teaching parents to utilize behavior management principles to effectively design and implement behavior management programs for a wide range of current and potential behavior management problems. Training of this kind would constitute a prevention-oriented model and would stress training parents to respond effectively to a variety of potential child management problems which have not, but may, occur in their family. The model would not focus on a particular population of children nor specific behavior management problems but upon general behavior program and behavior management strategies. Through such a model the parent would become adept at managing specific presenting behavior problems and learn strategies to enable them to respond effectively to potential problems.

Components of a Prevention Oriented Model

A prevention oriented training model should consist of a series of behavioral strategies, i.e., systematic approaches to problem solving, in at least four areas: problem detection; program design; program implementation; program evaluation. These are common steps in any behavioral treatment. However, as applied in a prevention oriented model the "problem" is a much broader range of behavior and therefore, the "program" necessarily more complex. A prevention oriented model should incorporate training in a variety of responses which, taken together, define the range of skills necessary to modify problematic behavior of the class training was designed to prevent. For example: A prevention oriented model of assertive training might incorporate training in verbalizing positive affective statements (I like the way you did that; I love you); negative affective statements (I don't like the way you did that; I dislike it when you...); suggestion-giving responses (In my opinion...) and refusal responses (I don't have time to serve on the committee). In other words training would focus on the range of responses commonly placed under the label "assertive." The model would also assess and teach those responses across different situations (in school, at home, on the job) and across different human environments (peers, authority figures, friends, enemies). Providing the trainee with strategies to function well in any potential assertive situation would define the model as prevention-oriented.

The same holds for a parent training model in which the behavioral skills are in the area of child management. Parents learn strategies for the management of three-year-olds but they also learn what to do when the three-year-old grows into his teens. The training model described here incorporates specific strategies in each of the four pre-requisite areas necessary for a prevention oriented model:

1. Problem Detection: Trainees learn strategies which include such skills as: analyzing the environment functionally; recognizing potentially inappropriate behaviors; defining behaviors operationally.

2. Program Design: Trainees learn procedures for monitoring and measuring behavior; learn to match treatment with problems, e.g., when and when not to use a response cost system or a time-out.

3. Program Implementation: Training focuses on the skills needed to teach behavior effectively, e.g., limit-setting, consistency, shaping. The skills are taught to all family members to facilitate generalization and maintenance of change.

4. Program Evaluation: Objective evaluation which measures change in all child management skills across time and environments is an integral part of the model. Trainees learn to make program changes based upon such evaluations.

Purpose

The following study was conducted as a pilot to facilitate the refinement and articulation of a prevention-oriented parenting training model which would be implemented on a broader scale. One family with several intense behavioral problems was arbitrarily selected as the pilot family. Criterion for selection of the pilot family was not important at this stage. It was felt that further investigations would have to be conducted across a range of families if the pilot proved successful. A variety of training devices have been used in parent training. These include: bug-in-the-ear (Welsh, 1966); programmed texts (Patterson, et. al. 1967) modeling and role-play plus feedback (Patterson & Brodsky, 1966; Rose, 1969); video tape (Bernal, 1969). The model under study incorporated many of these training tactics. Through didactic instruction, role playing, behavior-rehearsal, video tapes, printed handouts, written and verbal exercises and weekly quizes the model intended to teach the family specific behavior management and program implementation tactics plus systematic approaches to problem solving. The specific behavior management and program implementation tactics included: Verbal reinforcement; physical reinforcement; limit setting; consistency; time-out; ignoring; repeat to success; stop-the-world; extended isolation; shaping; modeling; behavior rehearsal; cueing; graphing; operationally defining behavior; data analysis; and program evaluation. The problem solving strategies as described above included: problem detection; program design; program implementation; and program evaluation.

The purpose of the study was to teach the family to utilize the behavior management tactics and problem solving strategies on selected presenting behavior problems in a supervised situation and then to assess their ability to utilize them on different behavior problems while unsupervised. The unsupervised condition was intended to be a measure of whether or not the family had learned how to implement behavior management programs for potential behavior problems. In other words, it assessed whether they had merely learned a tactic to manage a specific behavior or if they had learned a strategy which potentially was useful across behavior problems.

A Case Study

PROCEDURE

Subjects. The family selected for training had participated in a variety of therapeutic interventions for over one year at a mid-western state institution for emotionally disturbed children. The family's eight-year-old son Ted has been a residential patient but at the time of this study was in a day care program at the institution. A year of traditional therapy with the parents which included suggestions and advice on child management as well as a highly structured school program had produced some improvement in his school behavior, but no improvement at home. Ted's problem behaviors included high frequency fidgeting, short attention span, non-compliance, making "funny" noises at inappropriate times, "darting," temper tantrums, bossiness, touching and breaking other people's possessions, cluttering the house, performing dangerous acts, e.g., turning the boiler up to capacity, pouring gasoline over himself. Compared to his peer group he exhibited poor gross and fine motor skills as well as poor social skills. Academically he averaged first grade work and scored a full scale I.Q. of 94 (WISC). There were a total of six family members: mother, father, two brothers, George, age 16, Joe, 13, and a sister, Geri, age 19. Because of work commitments Geri did not participate in formal training and father attended irregularly.

Pre-treatment Assessment. Three different procedures were used to assess the parents' child management skills and to identify the stimulus controlling Ted's problem behaviors:

a. Home observation: A series of three, two hour home visits were made by experienced child care workers and professional trainees. Observation techniques were modifications of those used by Patterson (1971). An analysis was made of the family's interaction patterns, e.g., type of reinforcement used; method of teaching, discipline; affection-giving and receiving; antecedent and consequent conditions of inappropriate behaviors.

b. Activity video tape: A one hour video tape was made of the family's interactions during a semistructured situation, viz., playing a game similar to Shoots and Ladders. Ted's behavior was analyzed with different combinations of family members (mother alone with mother and brothers, with brothers alone). The mother's child management skills were also analyzed. The tapes were shown to the family to facilitate defining Ted's inappropriate behaviors.

c. Child Management Skill Level: Mother's responses to five role played child management problem situations were video taped. Treatment staff took the part of children and mother was asked to "handle the situations the best way she can." Some of Ted's problem behaviors were incorporated into the role-played vignettes as well as other behavior which might occur in the family, e.g., sib fights over which TV program to watch. Inappropriate management practices, e.g., repeated prodding to perform tasks were noted by staff and given special emphasis during training. These vignettes served as pre data for an assessment of the "quality" of child management skill. Post data was taken and evaluated following training. The same treatment staff and situations were used in the post tape allowing pre and post tapes to be paired for comparison.

Treatment

Family Training. A series of ten, two hour training sessions were held at the institution. Each session, co-led by three staff members, followed the same format: didactic instruction, written exercises, role-play, behavior rehearsal, written exercises, test and program evaluation (Brockway, 1973). The following principles and procedures were taught and evaluated: positive and negative reinforcement; punishment; defining, counting and graphing behavior, techniques of delivering social praise; how to ignore, set limits, be consistent; shaping; behavior rehearsal; token economy. Segments from the activity video tape were shown to the family during the training to demonstrate responses which probably maintained Ted's behavior and which therefore needed modification. As session progressed the family rehearsed responses to a variety of role-played child behavior problems. The role-plays were designed to become progressively more difficult in terms of management, e.g., verbal fights which developed into physical melees. Both staff and family critiqued the performance of the "parent." Often the "parent" was one of the children who either was assigned a role play by staff or designed his own. Training began with a heavy emphasis on didactic instruction in the early session and ended with a heavy emphasis on practice. At the end of the instruction-practice portion of the training a 10-15 item objective exam was given encompassing the subject matter covered in the session. The tests were immediately graded and discussed. The final two sessions were a series of live child management vignettes performed by staff to which the family responded in turn. Feedback was given after each role-play.

The second portion of each session (30-45 minutes) involved evaluation of the home management program designed to modify Ted's behaviors. The home program fell into two phases. In Phase I, treatment staff designed the programs and mother carried them out. In Phase II, mother designed and carried out her own programs on behaviors previously untreated. Staff periodically phoned mother between training sessions to resolve problems and give positive reinforcement for program implementation.

Samples from Training Sessions:

Exercises: Praise practice (Responses given verbally)

John is ten. He's a messy eater and you want him to develop better table manners. The vegetables are all over the table and there are pieces of meat on the floor. He has a salad bowl in front of him.

No salad has dropped on the floor or table even though he's taken some to eat. (You are Dad and you say. . . . .)

What's Wrong with the Program? (Responses are written or verbal)

Jane and Mary, age 11 and 12, fight every night over TV. Mom decided to set up a behavior program to change this. Mom defined her target behavior as "no more verbal or physical fights." She decided to give them each 25 cents if they did not fight for two days. What's wrong with the program?

1.____

2.____

3.____

Home Management Program. Phase I. The following behaviors were defined and treated during Phase I of the home management program:

1. a. Darting. Leaving an area assigned to him by parent without asking for permission or after permission was refused.
   b. Asking to go. Asking permission to leave an assigned area and only going to a place designated by parent.

2. a. Leaving room clean. Leaving a room or specified area as clean as it was before he entered it.
   b. Leaving room messy. Leaving a room or specified area more cluttered or dirtier than it was before he entered it.

3. a. Touching other people's possessions. Touching objects not belonging to him or specified out-of-bounds without asking permission.

4. a. Polite requests. Using the terms "may I", "could I", "would you" in a soft voice and waiting for a verbal or physical response without asking again.
   b. Interrupting. Making imperative statement in a loud harsh voice.

A modified ABA design and a variation of a multiple baseline design (Baer, Wolf & Risely, 1968) was used in treatment. All Phase I treatment procedures were identical except that new target behaviors were added to the contingencies. Ted's time at home was divided into half-hour blocks. Tangible reinforcement could be earned at the end of each half-hour block with social praise earned for appropriate behavior within time blocks. Treatment for each behavior was as follows:

1. Darting vs. Asking to Go. Baseline I was taken during the first week of training. The method of recording was demonstrated to mother who took data. For each complete half-hour block, during which Ted did not dart a plus mark (+) was recorded on a chart. Each time he darted a minus mark (-) was tallied. Treatment staff role-played a series of situations which involved darting vs. asking to go. Mother coded data from the simulated situations which was checked for reliability with staff coding. Mother was told to treat the behaviors at home "as usual."

Treatment: (Week 2 of training) Ted received a gold star on a chart for each plus he earned. Mother designed the chart which she kept in view in the kitchen. Each star was worth five minutes of "late nite" i.e., five minutes extended beyond his usual bedtime. If Ted "darted" he was sent to his room for the remainder of the time block. Ted's room was stripped of all high-interest activities during the treatment.

Baseline II: (Training Week 3) Mother was told to treat the darting vs. asking to go behaviors "as usual. . . anyway she wanted" except that she could not use the established contingencies of the program, viz., stars, late nights or sending him to his room. No specific suggestions were given to mother for controlling the behavior except those techniques she had learned during training sessions.

2. Messy vs. clean. Baseline I (Treatment Week 1) With staff help mother defined the targeted behaviors. At home she counted the incidents of messy (M) and clean (C). Ted earned a C for each half hour time block during which he made no "messes."

   Baseline II. (Treatment Week 2) Mother was told she could treat the behavior anyway she wanted but could not use stars, late nights or room time.

3. Touching other's possessions. Baseline I (Week 3) Mother defined the behavior and recorded data. Each time Ted touched an out-of-bounds item a (0) was recorded on the chart. Mother was instructed to "treat the behavior as usual." Treatment, which began during week 4, was identical to the treatment for darting vs. asking to go except touching was added to the contingency. Now if Ted darted or touched, he was sent to his room. If he asked to go and kept the area clean he earned a star.

   Baseline II began during week 7 of training. Instructions to mother were the same as mentioned above under this condition.

4. Polite vs. interrupt. Baseline I (Week 5), Treatment (Week 7) and Baseline II (Week 9) conditions were identical to those for behaviors 1-3 except that polite and interrupt were the target behaviors. Target behaviors 1, 2 and 3 were in the Baseline II phase when treatment was implemented on polite vs. interrupt.

Phase II. The following behaviors were treated during Phase II of the home management program:

1. a. Temper tantrums: Stamping feet, running into a room and slamming the door hard after command had been given by parent and/or yelling in response to a command or request.
   b. Compliance. Performing a behavior in time limit specified by command without exhibiting temper tantrum behaviors.

Baseline and treatment were conducted during weeks 8 and 9 of training. Mother designed and implemented every step in the program from problem definition to graphing data. During treatment Ted got a five-minute time-out (Patterson, 1968) for each tantrum and earned a penny and praise for each compliance without a tantrum. Staff did not supervise this program or make program suggestions. They only collected data from mother each week.

CRITERIA OF EVALUATION

Four criteria were used to assess the success of parent training:

a. Knowledge of behavior principles and child management techniques. This was measured through written exams given at the end of each session. The exams included items covered during the session as well as review items from earlier sessions. The tests were objective, viz., fill in the blank, circle the correct answer.

Sample:

If mom gives Tom 25¢ to stop him from screaming in the store mom has ________________ reinforced Tom's screaming behavior.
(positively, negatively)
If a program fails name two possible reasons.
1. ______________________________
2. ______________________________

b. Maintenance of behavior change at pre-established criteria levels. Maintaining a level over 80% for "asking to go," "leaving room clean" and polite approaches and less than 1 "touch per hour" were established as success levels. Mother counted the behaviors at home and reported data to staff weekly.

c. Change in the "quality" of child management skills. Change was assessed through rating pre and post video tapes of mother responding to simulated child management problem situations. A six point Likert type scale was developed to rate gains in child management skills (Brockway, 1973). Two independent, reliable observers rated the pre and post tapes. Below is a partial protocol for rating one skill, viz., verbal reinforcement.

	N.A.	Never	Seldom	Unually	Often	Always
Praises appropriate behavior	0	1	2	3	4	5
Gives praise frequently	0	1	2	3	4	5
Gives praise immediately	0	1	2	3	4	5
Speaks in warm tone	0	1	2	3	4	5
Speaks enthusiastically	0	1	2	3	4	5
Uses different phases/words	0	1	2	3	4	5
Facially animated when speaking	0	1	2	3	4	5
Makes praise statements without mixing punishing statements	0	1	2	3	4	5

Ratings were taken on mother's performance in the following areas: verbal reinforcement, physical reinforcement, limit-setting, consistency, giving a time out, ignoring, repeat to success.

d. Positive behavior change in parent designed program. In the final phases of training mother designed a program to modify a behavior not treated during the training period. She was responsible for all phases of program development and implementation. Mother counted behaviors at home and reported to staff weekly.

Interjudge Agreement

Interjudge Agreement on written tests was obtained by having two staff members grade the exam papers. Since the tests were objective percent agreement was 100.

Two independent raters were trained to use the child management assessment scale. They discussed behavioral definitions and coded parenting skills from role-played situations similar to the pre and post video tapes. Agreement on definitions and coding was obtained prior to tape viewing. The rating code was divided into three categories: Not applicable (N.A.); Never and Seldom; Usually, Often and Always. The interjudge agreement was calculated by dividing the total number of agreements within categories by the total number of agreements plus disagreements. The agreement percentage was 91.0.

No interjudge agreement checks were made on mother's recording behaviors in the home. However, prior to treatment of any Phase I behavior, staff role-played and discussed a variety of situations involving the targeted behavior which might occur. For example, Ted speaks in harsh tone, but says, "please, may I?"; Ted leaves the room clean but briefly runs into an undesignated area to get a new toy. Mother coded each situation. Practice coding continued until staff and mother achieved perfect agreement, 100 percent.

RESULTS

Test Results: (Table 1) The post instruction objective tests were given to assess the amount of information the family members learned each session. Test scores of mother and George, age 16, averaged 89 and 81 respectively. Ted and Joe, age 13, averaged 50 and 66. If test results are taken as the only criteria this indicates that Ted and Joe did not learn as much during training as mother and George.

Put Table 1 About Here

Child Management Assessment: (Table 2) Since the data was on an ordinal scale within pairs and the samples were related (the S served as her own control pre and post) the Sign Test (non parametic) was utilized (Siegel, 1956). Interest was only in change in one direction (behavior improvement) and a one tailed test was employed. The "quality" of parenting skills within techniques changed significantly in the direction of "good", to "excellent" (a score of 4 or 5 on the scale) between pre and post role-played video tapes.

Put Table 2 About Here

Home Management Program: (Table 3) Phase I: (Figure 1) All Phase I behaviors produced a change in the desired direction between Baseline I and treatment (the predetermined success levels were met and maintained). There were no changes in the direction of Baseline I during Baseline II. Using procedures she had learned in training mother was able to maintain Ted's behaviors at the success criteria levels during Baseline II.

Put Table 3 and Figure
1 About Here

Phase II: (Figure 2) There was a change in the percent of time Ted complied without tantrums between baseline ($\bar{X}$ = 79%) and treatment ($\bar{X}$ = 85%). This indicates that mother had learned general strategies for modifying behavior.

DISCUSSION

Experimental control in Phase I (Figure 1) was demonstrated within the multiple baseline design. The change in behavior from Baseline I levels to Baseline II supports the effectiveness of increased parenting skills in maintaining behaviors at desired levels. In the Baseline II condition mother was to respond to the behaviors "as usual" and the program contingencies were lifted. However, since she had been exposed to training her "usual" parenting skills had changed. If future research in this area incorporates both a reversal (ABAB) design and a Baseline II condition, it would delineate more clearly the amount of change in treatment conditions due to program contingencies vs. increases in parenting skills. The success of Phase II and Baseline II indicates that mother not only learned specific management techniques she also learned general strategies enhancing the credibility of a prevention oriented model.

This study has several limitations: One, it did not delineate what training variables or parent management skills were effective. One only knew in a gross sense that something worked. This suggests that future research in parent training should focus on a component analysis of the effectiveness of specific training devices. For instance, can role play

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and behavior rehearsal alone produce as much positive change as role play rehearsal plus didactic instruction. Secondly, it would have been advantageous to have had the parents carry out more than one self-designed treatment. Thirdly, follow up data on the child's behavior and further programs the parents implemented would greatly enhance the significance of the study.

Parent training focused primarily on developing mother's management skills, although other family members attended the sessions and participated in the discussions and role-plays. The ability of Ted's brothers to use behavior modification tactics was not systematically measured. While test results do indicate the younger boys learned some principles, the discussions and exams were primarily geared to mother. Protocols for teaching younger siblings to understand and perform behavior modification need development. Sibling training within a prevention-oriented model would enhance the maintenance of desired behavior over time and environment since siblings often spend as much or more time with a problem child than the parents.

Paternal involvement in this training program was minimal. His job kept him out of town for several days at a time. The program data may indicate the necessity for training both parents in two-parent families. Note the triangle on the graphs. The data following the triangle becomes more stable and grows in the desired direction. Review of the data indicated extreme differences in behavior away from the desired direction when father was in town vs. out of town. The parents were interviewed separately and the data differences noted . Father admitted he did not understand the program and in front of Ted would often disagree with his wife on her management decisions. Mother confirmed this behavior. Treatment staff explained the program and discussed the necessity for the tight contingencies on Ted. Father signed a contract with staff and his wife which stipulated both his and mother's behaviors in relation to the program. The triangle denotes the day father signed the contract. While variables were not controlled, the data does suggest the possible necessity for parental agreement in operating behavior programs. Further research is needed to demonstrate the efficiency of parent training with one vs. both parents as well as training individual families or groups of families.

The results of the pre-post training video tapes and the written exams demonstrates mother's ability to intellectualize and perform behavior modification. Her ability to design and carry out her own programs demonstrates the efficiency of parent training in maintaining and generalizing desirable behavior change in mother and child across time and environments while minimizing treatment staff time.

Except for staff-parent interjudge agreement checks on simulated program behavior prior to treatment conditions, no reliability ratings were attempted in the home. This could be done with periodic staff visits or confederate neighbors. However, the author's argue that interjudge agreement rating done in the clinic setting involved the observation of more salient behaviors and in that way were more valid. Often parents report that in short term (1-2 hour) home observations the child "was not really as bad as usual." Discussion with staff at the residential institution who had observed children in their home and residential setting supports this fact. Therefore, parent-staff agreement on a wide range of potential behavior of similar topography may constitute a more valid observation. Inferences of agreement across settings could be reasonably made even if home observation reliability is sacrificed. This type of agreement rating may prove more useful for a broad range of social behaviors. Of course, both types of agreement could be obtained (clinic and home) which would resolve the methodological difficulties. However, even if in home agreement checks were more valid than clinic settings this type of data collection is not feasible to a majority of clinicians. They are limited by staff numbers and staff time.

For any training model to function as a prevention-model the setting from which the training was delivered should be examined. In order to actually prevent severe behavior problems in families, training should be offered through pre-marital and pediatric clinics, as part of pre-marital counseling and/or as a component of family-life curriculum in high schools, through research the field is developing effective intervention strategies. A prevention model can be described as an effective intervention model delivered through "natural environments" or prevention settings, i.e. pre-problem settings. Since the training model of this setting was delivered through a problem setting viz a residential treatment center it lacks one essential component of a prevention model.

Ultimately a prevention-oriented parent training model should evolve into a self-generating system, i.e., there should be minimal direct mental health professional involvement in implementation and supervision of the model. Parents, pediatric clinics, pre-marital counselor and high school faculty who have been trained should become the parent trainers and program implementers.

In summary, as a method of achieving positive behavior changes in children parent training has emerged as a powerful intervention technique (Berkowitz & Graziano, 1972). As a treatment approach it involves limited professional involvement in terms of the gains achieved and enhances maintenance and generalization of desirable behavior since the programs can be carried out in the natural environment. A prevention-oriented model needs to incorporate training on problem solving strategies and in a broad range of possible behavior problems of children and not be limited to the successful modification of a presenting problem. This study incorporated these procedures and can be considered a prevention-oriented model that needs further research on a wider client population.

TABLES

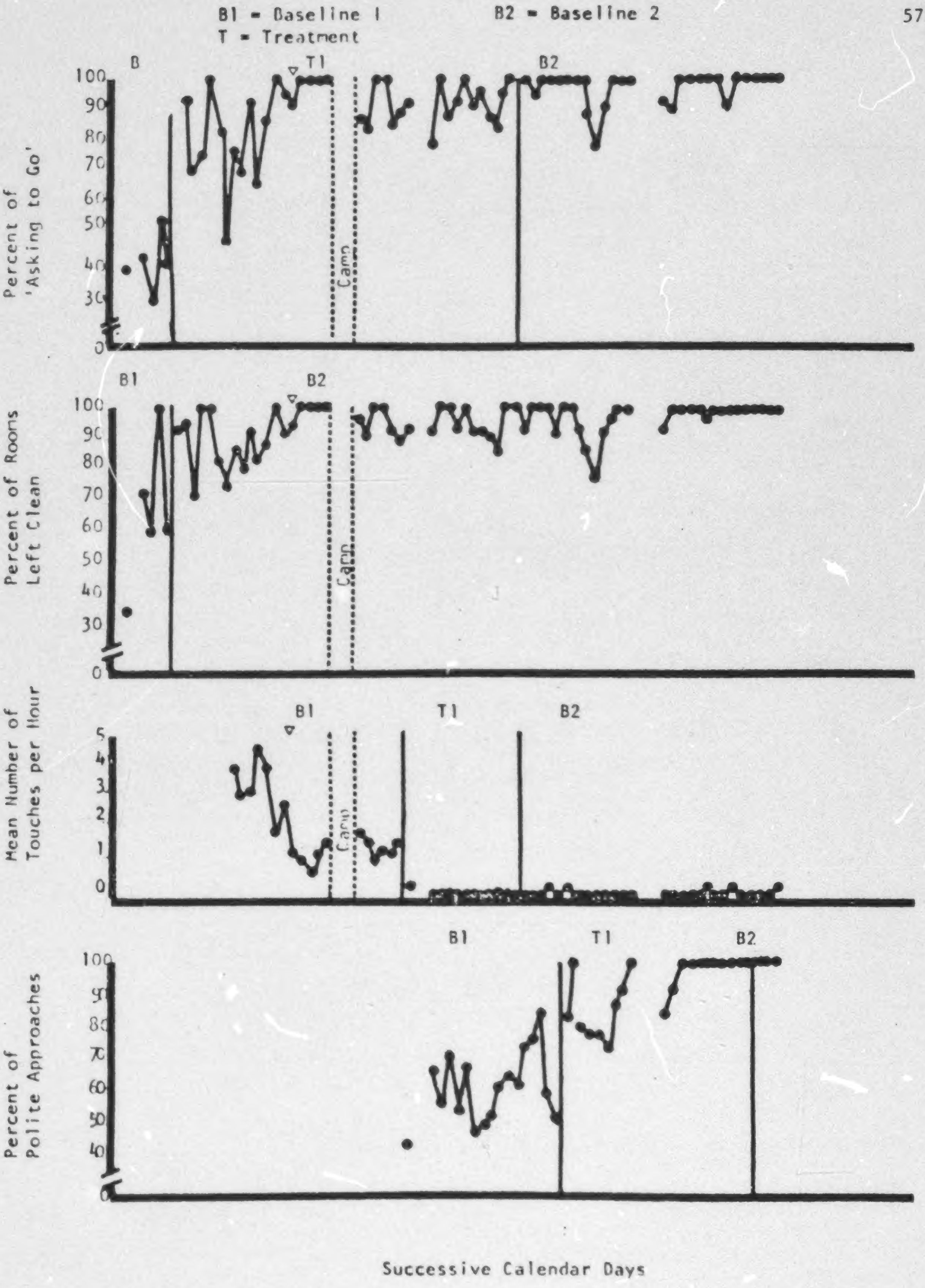
Table 1: Average behavior management exam scores

Table 2: Statistical significance of changes in mother's parenting skills on pre and post treatment role plays of potential problem behaviors

Table 3: Changes in and maintenance of Ted's behavior across treatment phases assessed in relation to the predetermined success criterian levels

FIGURES

Figure 1: Changes in and maintenance of Ted's behavior across treatment phases.


B1 = Baseline 1
T = Treatment
B2 = Baseline 2
B
T1
B2
Percent of 'Asking to Go'
100
90
80
70
60
50
40
30
0
Camp
B1
B2
Percent of Rooms Left Clean
100
90
80
70
60
50
40
30
0
Camp
B1
T1
B2
Mean Number of Touches per Hour
5
4
3
2
1
0
Camp
B1
T1
B2
Percent of Polite Approaches
100
90
80
70
60
50
40
0
Successive Calendar Days

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INCREASING THE SPEECH INTENSITY OF A RETARDED-EMOTIONALLY DISTURBED STUDENT IN A PUBLIC SCHOOL CLASSROOM*

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The presence of an atypical pattern in an individual's speech may result in that individual experiencing serious social, academic and vocational problems. These problems center about the fact that some atypical patterns may render an individual's speech nonfunctional for communication with others. Generally, atypical speech patterns are considered to be the result of poor articulation, marked stuttering or severe lisping. However, extremely low intensity speech may also be considered an atypical pattern in that it can also result in noncommunicative speech. In fact, an individual displaying extremely low intensity speech often generates serious instructional difficulties for a teacher that encounters such an individual in his or her classroom. For example:

a. It is necessary for the teacher to remain in close proximity to the student in order to discern the content of his or her speech. However, this proximity reduces the mobility and freedom of the teacher and does not provide a direct means of remediating the intensity problem.

b. Repeated requests by the teacher may be necessary to elicit normal intensity speech from the student. These requests probably represent wasted instructional time for both the student displaying low intensity speech as well as the other students in the classroom.

c. The teacher may avoid making requests that require a student with low intensity speech to respond verbally due to the amount of time and difficulty in obtaining audible responses. In this case the student receives little instruction or practice in speaking, therefore, other speech and language problems might develop. Again, no direct means of remediation is attempted.

d. The student's speech may go unnoticed or may be disregarded. Thus, due to the lack of effect that his or her speech has upon the immediate environment, the student may be systematically taught to speak less often.

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e. The teacher may find it necessary to abandon portions of the curriculum for a student speaking with extremely low speech intensity. That is, instruction in areas such as oral reading, telephone communication, or interviewing for employment, might be considered a wasted effort if a student has difficulty performing the speech components required by these tasks. This is a particularly intolerable situation in that the student is being denied the opportunity to develop other crucial skills.

This paper presents a program that was designed to correct the extremely low intensity speech displayed by a "retarded-emotionally disturbed" student. This student exhibited low intensity speech in classroom instructional settings, but on rare occasions had been observed to use speech of approximately normal intensity in nonacademic settings (e.g., recess, lunch). It was hypothesized that the student was capable of emitting speech of normal intensity but that the stimuli controlling such speech were not operative in classroom instructional settings. From this hypothesis a program was generated to develop the use of normal intensity speech in classroom settings.

Method

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Student

Tom was a 14-year-old male enrolled in a Special Education class in the Madison Public School System, Madison, Wisconsin. Previously Tom had been involved in programs at a day care facility administered by the local Association for Retarded Citizens and a state residential institution for the mentally ill. Tom's cumulative school folder contained educational, psychological, medical, and psychiatric reports which included such varied diagnoses as "organically damaged," "schizophrenic," "grossly retarded," and "manifesting a reactive emotional disturbance." The most recent psychometric testing (Stanford-Binet) indicated an I.Q. score of 55 at age 10. Low intensity speech is repeatedly mentioned with the earliest reference appearing at age seven. At age 7 an oral-peripheral exam performed by a medical specialist was negative, indicating that Tom had satisfactory lip-tongue control for speech production. Thus, no apparent organic basis for his low intensity speech was reported. At the initiation of this program Tom was inaudible beyond a distance of about five feet. Other behaviors exhibited included consistent and often inappropriate smiling and a number of bizzare motor movements. On rare occasions (e.g., recess) Tom spoke with what was regarded as normal intensity speech, but in classroom settings his speech was almost inaudible.

Program Design

The instructional program was divided into four phases. In Phase I Tom was taught to *initate individual words*, at a normal intensity,

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modeled by a practice teacher (T_1) at three different distances from T_1: face-to-face, eight feet, and fifteen feet. Instruction was conducted on a one to one tutorial basis by T_1 in the Instructional Materials Center (IMC) of the school. In Phase II Tom was taught to imitate phrases, at a normal intensity, modeled by T_1 at the same three distances. In Phase III Tom was taught to answer questions, at a normal intensity, asked by T_1 at the same three distances. In Phase IV Tom was taught to answer questions, at a normal intensity, asked by his regular teacher in his usual classroom (T_2) at the three distances.

Baseline measures of Tom's performance at all the distances for all phases were obtained prior to the start of instruction on Phase I. After Tom performed at criterion level at one distance within a phase, re-baseline measures of correct responding (acceptable intensity) were again obtained at the next farthest distance in that phase. When Tom performed at criterion level at all three distances within a phase, re-baseline measures of Tom's performance at the nearest distance in the subsequent phase was obtained.

This design was used in an attempt to delineate transfer of training or generalization effects. That is, it was of concern that the effects of instruction on simple responses and nearer distances would generalize to more complex responses and further distances. In addition, it was of concern that the criterion performance levels obtained by T_1 in the IMC would generalize to T_2 in the usual classroom setting.

Instructional Settings and Materials

The first three phases of the program were conducted in the IMC of the school with only T_1 present. The fourth phase was conducted in Tom's usual classroom with his classmates and T_2 present. Instruction was conducted under conditions in which three different distances separated Tom and the teacher because such separation provided (1) some means of quantifying "speech intensity" and (2) instruction and practice of normal intensity speech under varying conditions. The distances required were measured prior to the program and marked in heavy black pencil on the floor. Tom's position was held constant through all four phases while the teacher moved according to the distances required in each phase. Distractions were held at a minimum during Phases I, II and III, but no attempts were made to change the usual classroom setting during Phase IV. In all phases, Tom and the teacher were seated facing each other. Instruction took place five days a week and lasted for fifteen minutes each day.

Instructional Procedures

Correct responses were defined as the production of appropriate words, phrases or answers at normal speech intensities. Thus, in order to be considered correct a response had to meet two different criteria:

appropriateness and normal intensity. However, it had been determined prior to the start of the program that Tom could correctly imitate all of the words and phrases that were utilized and answer all of the questions correctly. Thus, it was anticipated that incorrect responding would be a function of Tom's intensity of speech.

During instruction correct responses were consequated with smiles and verbal praise (e.g., "good talking," "way to be loud"). Following an incorrect response, either teacher said, "No Tom, louder" and modeled the appropriate response at the correct intensity. If Tom imitated the teacher's model at the correct intensity, he was verbally praised. Instruction continued at each distance until Tom responded without error on two consecutive trials. A trial was defined as one presentation of each of five cues (e.g., Phase I: No, Hello, Goodbye, Yes, Tom). Thus, to proceed to the next distance or phase Tom was required to make 10 consecutive correct responses on the task on which he was receiving instruction.

The exact design of the instructional program is outlined below:

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Phase I: Teaching Tom to Imitate Single Words.

The following words were modeled by T_1 for Tom to imitate: No, Hello, Goodbye, Yes, and Tom.

Face-to-Face - Tom and T_1 sat face-to-face in the IMC. T_1 said, "Tom say (word)." T_1 followed the previously described teaching procedures for correct or incorrect responding. These procedures were followed until Tom correctly imitated the five single words on two consecutive occasions.

Eight Feet - T_1 sat a distance of eight feet from and facing Tom. The re-baseline and teaching procedures described above were followed until Tom reached criterion (2 errorless trials) at eight feet from T_1.

Fifteen Feet - T_1 sat a distance of fifteen feet from and facing Tom. The re-baseline and teaching procedures described above were followed until Tom reached criterion (2 errorless trials) at fifteen feet from T_1.

Phase II: Teaching Tom to Imitate Phrases.

The following five phrases were modeled by T_1 for Tom to imitate: Badger School; Good Morning, Mr. Evans; Hello, Ms. Pierce; Goodnight, mother; The weather is (   ).

Face-to-Face - Tom and T_1 sat face-to-face and T_1 said, "Tom say (phrase)." T_1 followed the previously delineated teaching procedure for correct or incorrect responding. These procedures were followed until Tom correctly imitated the five phrases on two consecutive occasions.

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Eight Feet - T_1 sat a distance of eight feet from and facing Tom. The re-baseline and teaching procedures described above were followed until Tom reached criterion (2 errorless trials) at eight feet from T_1.

Fifteen Feet - T_1 sat a distance of fifteen feet from and facing Tom. The re-baseline and teaching procedures described above were followed until Tom reached criterion (2 errorless trials) at fifteen feet from T_1.

Phase III: Teaching Tom to Answer Questions.

The following questions were asked by T_1: What is your name? What are we having for lunch? Where do you live? What is your phone number? What are your parent's names?

Face-to-Face - Tom and T_1 sat face-to-face and T_1 asked, "Tom (question)." T_1 followed the previously delineated teaching procedure for correct or incorrect responding. These procedures were followed until Tom correctly answered the five questions on two consecutive occasions.

Eight Feet - T_1 sat a distance of eight feet from and facing Tom. The re-baseline and teaching procedures described above were followed until Tom reached criterion (2 errorless trials) at eight feet from T_1.

Fifteen Feet - T_1 sat a distance of fifteen feet from and facing Tom. The re-baseline and teaching procedures described above were followed until Tom reached criterion (2 errorless trials) at fifteen feet from T_1.

Phase IV: Teaching Tom to Answer Questions Asked by his Regular Teacher in the Usual Classroom Setting.

The questions were the same as those used in Phase III.

Face-to-Face - Repeated procedures from Phase III with T_2 in the usual classroom setting.

Eight Feet - Repeat procedures from Phase III with T_2 in the usual classroom setting.

Fifteen Feet - Repeat procedures from Phase III with T_2 in the usual classroom setting.

Results and Discussion

Prior to instruction, Tom's performance on each task of each phase of the program was assessed (baseline). This performance is depicted graphically in Figures 1-A, 2-A, 3-A, and 4-A. As can be discerned from trials 1 and 2 Figures 1, 2, 3 and 4, Tom did not respond correctly at any distance during any phase. That is, Tom spoke at such low intensities that his speech was judged by the teachers as insufficient for normal interpersonal communication.

Phase I:

During trials 3 and 4 re-baseline measures of Tom's performance in imitating single word responses at a normal intensity while face-to-face with T were obtained. As can be discerned from Figure 1-B, Tom continued to respond incorrectly during trials 3 and 4 and a total of 6 teaching trials (Figure 1-C) were required before Tom reached the instructional criterion of 2 consecutive errorless trials.

At trials 13 and 14 (Figure 1-D) Tom was asked to imitate the 5 words at an intensity that was judged normal at a distance of 8 feet from T_1. Tom made 2 out of a possible 5 correct responses in both of these trials. It should be noted that during the initial baseline period (Figure 1-A, trials 1 and 2) Tom did not make a single correct response. At trial 15, (Figure 1-E) instruction was initiated and only 4 teaching trials were required for Tom to reach criterion at the 8 foot distance.

At trials 19 and 20 (Figure 1-F) Tom was asked to imitate the 5 words at an intensity that was judged normal at a distance of 15 feet from T_1. As can be discerned, Tom made 3 and 4 out of a possible 5 correct responses respectively. Again, it should be noted that Tom's performance improved markedly when compared to his performance on the initial baseline period. At trial 21 (Figure 1-6) instruction was initiated and only 4 teaching trials were required for Tom to reach criterion. Thus, by trial 25 Tom had demonstrated that he could imitate single words at a normal intensity at 3 different distances from T_1.

Phase II:

The responses required of Tom in Phase II of the program consisted of the imitation of 5 phases at a normal speech intensity. At trials 26 and 27 (Figure 2-H) Tom was asked to imitate the 5 phrases while face-to-face with T_1. Tom made 2 and 3 out of a possible 5 correct responses on these trials. This performance represents an improvement over the initial baseline performance (Figure 2-A, trials 1 and 2) when Tom made no correct responses. Teaching began on trial 28 (Figure 2-I) and after 5 training trials the instructional criterion was reached.

At trials 33 and 34 (Figure 2-J) Tom was asked to imitate the 5 phrases at a distance of 8 feet from T_1. Again, Tom demonstrated improved performance over the initial baseline trials by making 3 and 4 correct responses on these trials. Instruction on these responses began on trial 35 and was completed in only 3 teaching trials (Figure 2-K).

The last step in Phase II, Tom's imitation of 5 phrases at a distance of 15 feet from T_1, was re-baselined on trials 38 and 39 (Figure 2-L). Tom performed at criterion level on these trials and therefore no instruction was required. Tom's performance on these trials represents an improvement from zero correct during initial baseline (Figure 2-A, trials 1 and 2) to errorless performance on these same responses without specific instruction (Figure 2-L, trials 38 and 39).

Phase III:

In Phase III Tom was required to answer 5 questions asked by T_1. At trials 40 and 41 (Figure 3-M) Tom was asked the 5 questions while he was face-to-face with the T_1. In both of these trials he made 4 out of the 5 possible correct answers. Instruction began on trial 42 (Figure 3-N) and only 3 teaching trials were necessary to reach criterion. In the remaining tasks of Phase III, Tom was asked to answer the same questions at first 8 and then 15 foot distances from T_1. Tom answered all questions correctly at both the 8 foot (Figure 3-O) and the 15 foot distances (Figure 3-P). Thus, Tom's answers on trials 45, 46, 47 and 48 were correct on re-baseline even though none of the questions had been answered correctly during the initial baseline trials (Figure 3-A, trials 1 and 2).

Phase IV:

The final phase of the program required Tom to answer the same questions as in Phase III, but they were asked by T_2 in his usual classroom setting. As can be discerned from trials 49-54 (Figure 4-Q, 4-R, and 4-S), Tom performed errorlessly during the re-baselining of Phase IV. Of course, this represents a dramatic improvement over zero correct responding during the initial baseline trials (Figure 4-A, trials 1 and 2).

Two aspects of the results indicate that transfer of training or generalization effects were obtained. First, during initial baseline (Figures 1-A, 2-A, 3-A, 4-A, trials 1 and 2) Tom did not respond correctly to any of the tasks in the program. However, after he was taught to perform the initial instructional task (one word imitations while face-to-face with the teacher) substantial increases in correct responding in subsequent tasks (one word imitations at 8 and 15 foot distances) were obtained. As can be discerned from inspection of Table 1, this effect became so pronounced that instruction was required at only one distance (face-to-face) in Phases III and IV. That is, Tom made correct responses in almost the entire second half of the program without instruction on the specific tasks.

Insert Table 1 About Here

The second indication of generalization effects became apparent as Tom proceeded through the program requiring fewer teaching trials across tasks (Table 2).

Insert Table 2 About Here

Thus, it appears that instruction on early tasks facilitated correct responding on subsequent tasks. This effect was so pronounced that instruction was unnecessary at the last distance of Phase II, at the last two distances of Phase III and at all distances of Phase IV.

Unfortunately, there are several notable inadequacies in the program design. Inter-rater reliability checks of teacher judgments of Tom's intensity of speech were not obtained. Obviously, the corraborating measures of an independent observer would have provided much needed reliability checks. Even though both teachers judged Tom's speech intensity to be improved following instruction, the possibility of biased observations remains a problem.

In addition, measures of generalization or follow-up beyond those involved in Phase IV were not obtained. Certainly the measures of Tom's performance with his regular teacher in his usual classroom are better than no attempt to assess generalization at all. However, a broader sampling of the intensity of Tom's speech both before and after intervention would have provided a more adequate test of program effectiveness.

Despite methodological flaws it seems that at least two points might be offered. First, the relatively simple intervention described appeared effective and expedient in increasing the speech intensity of an adolescent male with a long history of communication difficulties. Although at this writing no new data has been secured since instruction was terminated, the regular teacher reports that Tom has continued to maintain normal intensity speech in his classroom. Although occasional relapses to lower intensity speech in out of class settings (e.g., bus line) have been observed, Tom has exhibited normal speech intensity in more situations than prior to instruction.

Second, the teacher conceptualized the problem in a way that allowed for empirical intervention. That is, the problem was viewed as one of stimulus control. Tom had demonstrated that he was capable of speaking within a normal intensity range, but was not doing so in classroom settings. A specific program was designed that resulted in the use of normal intensity speech at least in classroom settings. Furthermore, it seems that others could use the same or similar procedures to obtain normal intensity speech in other environments.

Table 1

Phase	Distance	Initial Baseline		Re-Baseline	
		Trial	Number Correct	Trial	Number Correct
I	face-to-face	1	0/5	3	0/5
		2	0/5	4	0/5
I	8 feet	1	0/5	13	2/5
		2	0/5	14	2/5
I	15 feet	1	0/5	19	3/5
		2	0/5	20	4/5
II	face-to-face	1	0/5	26	2/5
		2	0/5	27	3/5
II	8 feet	1	0/5	33	3/5
		2	0/5	34	4/5
II	15 feet	1	0/5	38	5/5
		2	0/5	39	5/5
III	face-to-face	1	0/5	40	4/5
		2	0/5	41	4/5
III	8 feet	1	0/5	45	5/5
		2	0/5	46	5/5
III	15 feet	1	0/5	47	5/5
		2	0/5	48	5/5
IV	face-to-face	1	0/5	49	5/5
		2	0/5	50	5/5
IV	8 feet	1	0/5	51	5/5
		2	0/5	52	5/5
IV	15 feet	1	0/5	53	5/5
		2	0/5	54	5/5

Table 2

Phase	Distance	Teaching Trials to Criterion
I	face-to-face	8
I	8 feet	4
I	15 feet	4
II	face-to-face	5
II	8 feet	3
II	15 feet	0
III	face-to-face	3
III	8 feet	0
III	15 feet	0
IV	face-to-face	0
IV	8 feet	0
IV	15 feet	0

FIGURE I (PHASE I)

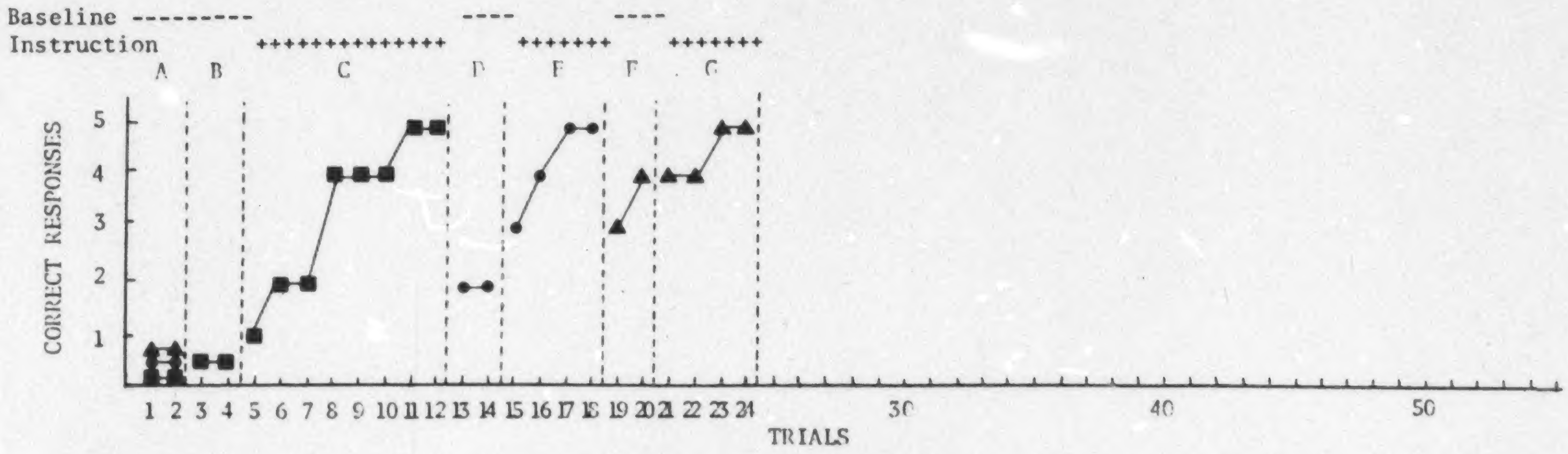

FIGURE 2 (PHASE II)

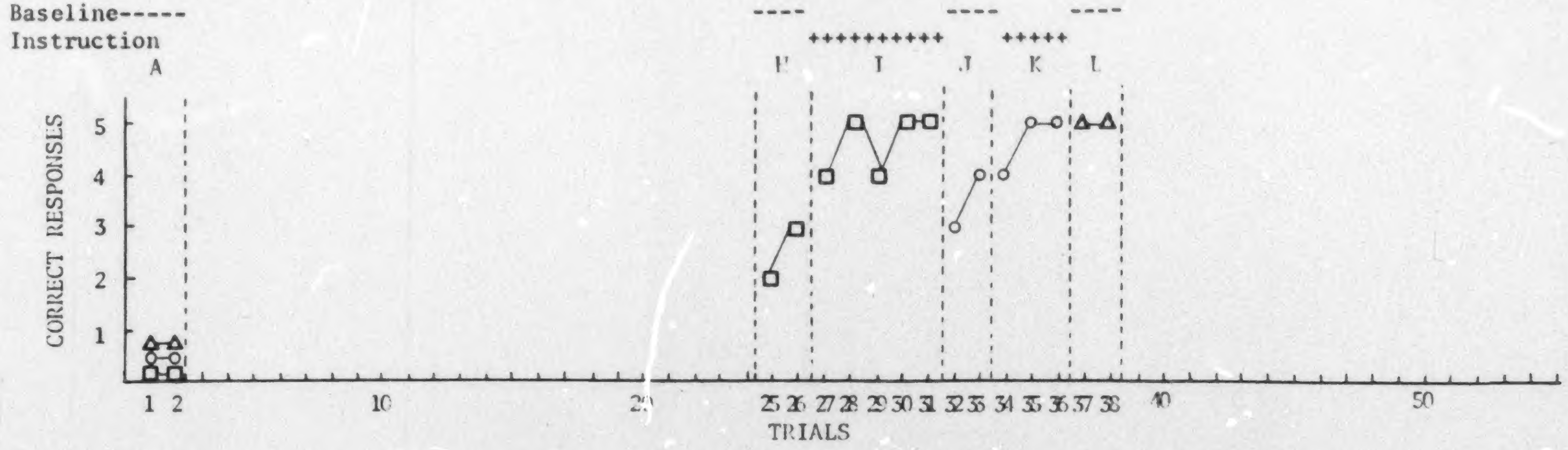

FIGURE 3 (PHASE III)

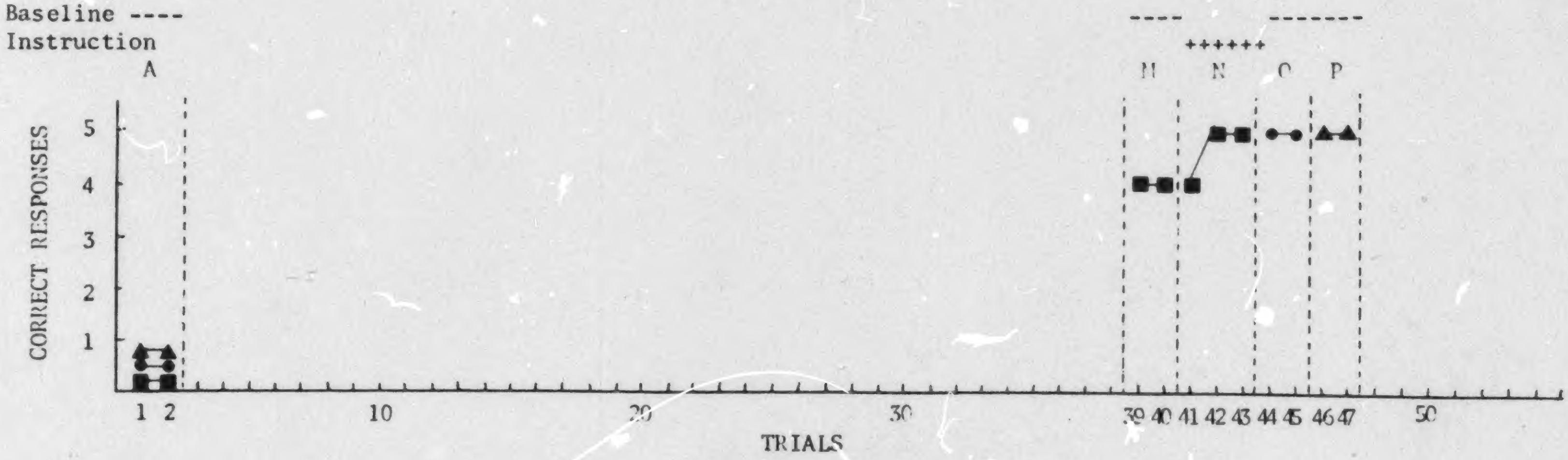

FIGURE 4 (PHASE IV)